

Gandhi Memorial College Of Education Bantala Jammu

Why & How Of Geography Teaching

A. K. KAUL

**VINOD PUBLICATIONS
LUDHIANA**

CC-0. Agamrigam Digital Preservation Foundation Chandigarh

Gandhi Memorial College Of Education Bantalab Jammu

Why & How Of Geography Teaching

A.K. KAUL

2001

VINMD PUBLICATIONS

EDUCATIONAL PUBLISHERS

Tajpur Road, LDHIANA.

Published by :

VINOD TANDON

546, Books Market,

Vinod Publications

(Educational Publishers)

Tajpur Road, Ludhiana,

Phone : Shop : 664960, 650629 Resl : 721629

Mobile : 98141-29072

c Publishers

Price : 100. 00

Printed at :
Rachna Press,
Jalandhar City.

CONTENTS

Chapter

Page

Preface

1. AIMS AND OBJECTIVES

1

Introduction—I. *Geography As a Means To Develop A Sense Of Genuine Local Patriotism*—Characteristic Features of India—A Big Country—A Nation of Diversities—(a) Physical landscape (b) Population (c) Economic Imbalances—Role of Geography—A Geographical Entity—*Economic Interdependence*—Common Density. II. *Geography as A Means To Develop Broadmindedness, Sense of Human Brotherhood and International Understanding*—The Need—(i) Peace and Survival (ii) Shrinking World (iii) *Interdependence* (iv) World Community—Nature of Geography—Role of Geography—(i) Knowledge of the World (ii) Primary needs (iii) Interdependence—Conclusion.

2. METHODS OF TEACHING

20

Introduction—Origin of Methods of Teaching—Factors of the Method—(i) Child (ii) Teacher (iii) Curriculum—I. *Story Telling Method*—Psychological Basis—Method—(i) Suitability (ii) Story (iii) Teacher (iv) Pupils (v) Aids II. *Observation Method*—Geographic methodology—Significance of

the Observation Method—Psychological Basis—
Procedure—Observations Within the School Campus—
 (a) Survey and Map Study (b) Observations of
 the sun (c) Observations of Weather—Observations
 outside the school (a) Working Around the School
 (b) Half a Day's Work—Observations of the Second
 Hand Material—Role of a Teacher—Pupils in
 Observation Method. III. *Comparative Method—*
Introduction—Psychological Basis—Procedure—(a) In
 built Comparisons (b) Teacher made Comparisons
 Switzerland & Kashmir, IV. *Laboratory Method—*
Introduction—Psychological Basis—Experimentation in
Geography—Procedure—List of experiments and
Demonstrations—Some Demonstrations—(a) Rotation
 (b) Land and Sea Breeze (c) Data Processing—
 Temperature Data of Station A and B—V. *Project*
Method—Introduction—Definitions—Project Method
and Pupils—Role of a Teacher—Projects in
Geography—Procedure (i) Set or Choice of the
 Project (ii) Presentation Act (iii) Completion of
 the Project. VI. *Regional Method—Introduction—*
Development of Regional Concept—Region—Its
Definitions and Kinds—Procedure. VII. *Textbook*
Method—Procedure—(i) Earliest (ii) Improved
 (iii) Joint study.

3. ORGANISATIONAL ACTIVITIES

Excursions—Psychological Basis—Philosophical Basis
—Utility—Characteristics—Organisation—(a) Teachers
Preparation (b) Pupils (c) Administration (d) Conduct
of Field Work (e) Evaluation of Field Works—Types

of *Field Work*—(i) Macro-area Reconnaissance
 (ii) Micro-area Study (iii) The Unit Field Study
 (iv) Sample Area Study (v) Field Map Reading and
 Interpretation—Conclusion. II. *Geography Room
 Cum Laboratory*—How to Organise it—Why
 Geography Room (i) Learning Environment (ii) Sus-
 tains Interest (iii) Boosts Prestige (iv) Unfinished
 Jobs (v) Geographical tools (vi) Self Reliance
 (vii) Correlation—Characteristics—Layout—(a) *Teach-
 ing Area* (i) Chalkboards (ii) Map Display
 (iii) Picture Display (iv) Screen (v) Storage of
 Stencils (vi) Teachers' Table (b) *Class Seated Area*
 (c) *Working Area* (i) Sand Tray (ii) Tracing Table
 (iii) Display Cabinet (iv) Observation site (d) *Fittings
 and Furniture* (i) Display Board (ii) Notice and
 Display Panels (iii) Book Shelves (iv) Filing Cabinets
 (v) Map Cup-boards (vi) Other Cup-boards (c) Aids
 and Equipment (i) Chalkboard (ii) Maps (iii) Globes
 (iv) Models (v) Pictures (vi) Atlases (vii) Weather
 Observation Kit (viii) Audio-Visual Equipment
 (x) Survey Equipment (f) Storage III. *Geography
 Museum—School Museum—Values—Characteristics—
 Display of Exhibits* (a) The World (i) Natural
 Regions (ii) Political Divisions (iii) Shelters and
 Settlement Patterns (b) Home Region and
 Country.

4. TEACHING AIDS

87

Teaching and Communication—Types of Experiences—
Why Teaching Aids (i) Motivate Learning (ii) Aid
 Clarification (iii) Stimulate Learning (iv) Provide

Variety (v) Break Barriers of Communication
 (vi) Learning Situation (vii) Bring the World into Classroom (viii) Permanent Learning (ix) Widespread Education—*Classification of Teaching Aids* (A) Graphic Materials (i) Pictures (ii) Charts (iii) Diagrams (iv) *Graphs* (a) Line Graph (b) Bar Graph (c) Circle or Pie Graph (d) Pictorial Graph (v) *Maps*—Introduction—Definitions—Purpose (i) World Understanding (ii) Source of Information (iii) Planning (iv) Aid Visualisation (v) Study Relationships (vi) Teaching and Learning—Kinds of Maps—Significance Map Skills (i) Surveying (ii) Projections (iii) Scale (iv) Direction (v) Conventional Signs—*Wall Map*—*Atlas* Display Boards—(i) Chalkboard (ii) Bulletin Boards (iii) Flannel Board—*Three Dimensional Aids* (i) Objects and Specimens (ii) Models (iii) GLOBE Types and Sizes—Projected Aids (i) Slides (ii) Filmstrips (iii) Epidiascope (iv) Overhead Projector (v) Films *Audio-Visual Equipment* (i) Radio (ii) Television.

HOME GEOGRAPHY

119

Introduction—*Meaning—Significance* (i) Trains in methodology (ii) Develops Vocabulary (iii) Standard of Reference (iv) Observe Interrelationships (v) Sense of Reality (vi) Sympathy and Understanding (vii) Belongingness. *Use as a Method of Study* (i) As an introduction (ii) Study of Specific Place (iii) Methods and Equipment (iv) Nature of Geography (v) General Education. *Activities Involved.*

6. CORRELATION

131

Introduction—What and How of Correlation—Correlation of geography with (a) Languages—(b) History (c) Science (d) Mathematics (e) Current Events.

7. EVALUATION

138

Introduction—Purpose—Forms of Questions—*Essay Type Questions*—Long Answer type—Short Answer type—*New Or Objective Type Tests*—Matching type—Multiple choice type—Completion type—True and False type. Scoring Key.

8. LESSON PLANNING

148

Introduction—Advantages—Some considerations—Special features of a geography lesson—*Lesson Plan*—Lesson Plan No. 1—Insolation, Class IX—Lesson Plan No. 2—Land & Climate of Nigeria, Class VI—Scoring Key.

9. CURRICULUM

160

Attributes—Principles—(i) Aims of Teaching (ii) Study of the World (iii) Graded Syllabus (iv) Unified Field (v) Relationship with other subjects (vi) Study of Homeland (vii) Map-work (viii) Out of Class Activities—*Present N.C.E.R.T. Syllabus*.

10. NATURE AND SCOPE

168

Exploration and Discovery—Greeks—Romans—Europe India—Arabia—Europe—World. *Growth of the Discipline*—Ancient Period—Mediaeval—Modern—

Founders of Modern Geography—Dualism—Integration. *Nature of Geography*—Content—Definitions of geography—Physical geography—Human geography. *Methods or Approaches*—Systematic geography—Regional geography. *Techniques*—Literacy—Field Work—Numeracy or Quantification—Graphicacy or Visual—Spatial method—*Geographical view point*—Hettner's statement—*Conclusion* regarding the Nature of Geography. *Scope of Geography*—*Sub-Fields of Geography*.

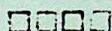
11. CONCEPTS AND TRENDS

194

Introduction—I *Geography as the Description of the Earth*—Description—Explanatory Description—The Earth II. *Geography is the Study of the Earth as the Home of man*. III. *Geography is the Science of Distributions*. IV. *Geography is the study of Landscape—Natural and Cultural*—Introduction—Definitions—Utility—Natural and Cultural Landscape Man—Environment Relationship. V. *Geography is the study of Relationships between the Natural Environment and Man*. Or The Adjustment of Human Activities to the Natural Environment—Introduction—Determinism—Possibilism. VI. *Geography is the study of Interaction between Man and Environment*—Introduction—Environment—Man—Interaction Man--Environment Interaction—(i) Location (ii) Landforms (iii) Water bodies (iv) Weather and Climate (v) Structure (vi) Natural vegetation (vii) Native Animal Life—Conclusion. VII. *Geography is the study of Areal Differentiation of the Earth*—Hettner's

view point—Other contributors—Explanation—Area
(i) Area as place (ii) Area as content (iii) Area
as organisation—Conclusion. VIII. *Geography is
the study of the Spatial Relationships of Phenomena—*
Localisation—Areal Differentiation—Explanation.
IX. *Geography is the science of Causal Relationships*
Development—Natural Phenomena—Natural and
Human Phenomena—Human Phenomena—Coinci-
dence. X. *Geography is the Synthesising Science and*
An Integrating Discipline—Classification—
Integration.

INDEX 227



AIMS AND OBJECTIVES

Education, writes Brubacher, is a process of unfolding what was originally enfolded. The term 'education' is derived from a Latin word *e-ducere* meaning to lead forth, to bring out. The process of education makes actually explicit what was basically implicit. In order to achieve that goal the child is to be provided with a fitting environment so that in its absence the realisation of his potentialities may not get thwarted. The gardner in order to get the best results from the seeds sown, tends plants, weeds, waters and fertilizes them. In the right growth and development of pupils, the same responsibility is to be shouldered by the parents and teachers. The process of education consists in arranging for the child opportunities for exercising his native powers of intelligence, feeling and action.....and guiding and directing that exercise so that he can come to think wisely, feel rightly and act effectively in regard to things and people. The real purpose of a school, it seems, is to prepare the youth of the nation to face intelligently and with the right spirit the wider issues of life, of the nation and the world at large. Education is assigned certain aims and objectives which perform three important functions. They give the process of education a direction, motivate it and provide criteria for its evaluation.

A person is born as an individual but he grows as a member of a society. It is the purpose of education to make him a man and a citizen, because his individual development is of the same significance as his role of a useful member of society. The individual growth is as important as his social involvement and participation. The two aims of education, given by the philosopher, are the individual aim and the social aim. But the parents too, have a purpose in getting their

wards educated. Education helps them to adopt a profession or a vocation and to earn a living. So the third objective of education is utilitarian in essence.

Identical views regarding the aims and objectives of education have been expressed in the Harvard Report (1958) in these words, "—— education seeks to do two things ; help young persons fulfil, the unique, particular function in life which it is in them to fulfil, and fit them so far as it can for those common spheres which, as citizens and heirs of a joint culture, they will share with others " James Fairgrieve (1930), the pioneer in school geography, states that education has two purposes to serve ; "one is how to live and the other how to earn a living." Education, he asserted, is of no use if it does not fulfil both of these purposes.

After the aims of education have been agreed upon the next step is to decide the ways and means to achieve them. In this connection curriculum presents the ground which the teacher and pupils cover in order to accomplish the set objectives. It is so to say a runway, as the term implies, a course which the runners in a race run to reach the goal. As the curriculum is a blend of the race experience and student experience, it is divided for the sake of convenience, traditionally, into various subject fields like science, mathematics, history, geography etc. It is through the treatment and study of these curricular areas, singly and jointly, that the aims of education are achieved. Geography helps us in achieving all the aims stated above. For discussion we take up only the following aims of geography teaching in secondary schools.

I

GEOGRAPHY AS A MEANS TO DEVELOP A SENSE OF GENUINE LOCAL PATRIOTISM

A child, generally, has his home at a particular place on the surface of the earth be it in a hamlet or a city, a village or a metropolis. There, as the years advance, he is in daily contact with a patch of land, the site of his village or street, other children and people who live there. He grows with the feeling that he is a part of the total geographical scene of that place. When in conversation with his class fellows of some other region he, unwittingly, refers to his place of residence as 'my village' or 'our locality'. He identifies himself with the social group

and the area occupied by it. This feeling of 'belongingness' is a natural sequel to the balanced growth of an individual ; the part played in this connection by school and other social institutions notwithstanding. As he moves from elementary to secondary and thence to higher secondary stage his field of interest becomes wider and wider. He encounters a bigger community and encompasses a larger area—a province or a state. This feeling of belongingness is further strengthened in him through the instructions that he receives in a school in various subject fields including geography. The field trips and tours into the home region deepen his liking for his locality. In him is fostered loyalty towards the community and locality to which he belongs. He develops interest for its welfare and well-being.

By now he realizes that the states are nothing but convenient and manageable units of a bigger territory—the country. He understands the interdependence and interrelationship of these states and appreciates their complementary role in the progress and prosperity of the nation. He comprehends spatial unity given to a country by its international boundaries. The frontiers of a country are like the wall of a living cell that holds its life substance—the cytoplasm—together. In his country he can travel from east to west, from north to south, freely without any restrictions or travel documents. Within the frontiers, all the communities and social groups, whichever part they belong, have a common cultural heritage, a legacy of the past. They share a common destiny, an attribute of the present. All the inhabitants of a country cherish similar hopes and aspirations for their future. In the national prosperity lies the prosperity of every individual and in a national calamity all are to suffer. The sense of belongingness when extended to a national community and national territory results in the love for one's country and the desire to render to it wholehearted and selfless service. This is what is called patriotism.

At this stage one misunderstanding is likely to arise. Geography, as a discipline devoted to the study of the world and its people, stresses universal brotherhood and feeling of oneness of the world community. This attribute of geography is termed as globalism. But in the preceding paras we have been pleading for local patriotism or what in other words is termed as 'localism.' Why these contradictory claims ? Can 'globalism' and 'localism' co-exist in geography ? Yes, the sense of belongingness

is nourished at grass root level—the home and the hamlet—and then extended gradually to state and country. A person who holds genuine interest in and feeling for his state and country can be expected to have same enthusiasm for world affairs. James Fairgrieve's (1930) apt remarks, in this context, read, "One distrusts an internationalist who is not a nationalist : one distrusts a nationalist who does not take interest in local affairs. It is easy enough to sympathise with the inhabitants of Asia Minor, it is much more difficult to sympathise with the lady nextdoor who throws rubbish into your backyard....."

Development of genuine local patriotism is one of our aims of teaching geography in secondary schools. As the conditions are obtainable in India the task is onerous and it demands a concerted effort on the part of teachers and educationists.

CHARACTERISTIC FEATURES

Certain characteristics of India and Indian people are peculiar to this country and consequently, differentiate it from other countries of the world. An awareness and understanding of these characteristics is essential and basic for the comprehension of the magnitude of the problem in hand. These on the surface appear negative factors in the development of patriotism but on close examination these can be helpful in achieving the given aim.

A Big Country

India with an area of 32.3 lakh sq. km. is the seventh largest country in the world after U.S.S.R., Canada, China, Brazil, U.S.A. and Australia. It is the second largest country in Asia after China and the largest in South Asia. It has a very long land boundary of 15,000 km and a coastline of 6000 km. Its north-south and east-west extent is 3200 km and 2900 km respectively. Its very long boundaries, of diverse terrain, are to be safeguarded against foreign invasions. Similarly, long distances are to be traversed in order to reach different parts of the country. This necessitates the provision of network of roads, railways, waterways and airways in order to provide transport facilities and to hold the country together.

In 1981 it had a population of about 700 million. In number of inhabitants it is the second largest country in the world after China. To form a

correct estimate of the population of India it is desirable to compare our country with the continent of Africa. The facts presented might have caught the attention of our people during the recent Non-Aligned Summit held at Delhi. The entire African continent along with the adjacent islands has a total population of about 450 million. This population is grouped into fifty three independent countries. Population wise Indian Republic can have eighty countries of African magnitude. This huge population is to be fed, clothed, educated, provided with medical facilities and social amenities. What a stupendous task !

A Nation of Diversities

India as a land of diversities has few equals in the world. These diversities are because of its vast size, topography and history. These are discernible in its physical and cultural landscape as well as in the composition of its population.

(a) Physical Landscape

The country is characterised by extremes in its physical landscape. It is a country with high towering mountains and low hills, vast level plains and broken plateaux, long perennial rivers and short seasonal streams, deserts and deltas. The climatic diversity is no less significant. Here we experience tropical, subtropical, temperate and arctic conditions. We have here the rainiest areas and the areas that are known for aridity. The combined effect of the terrain and climate has given rise to a variety in natural vegetation and native animal life and consequently to diverse environments.

(b) Population

India has been, throughout its long history, a meeting place of diverse cultures that came from across its borders. This has resulted in a rich mosaic of varied cultures. Today the teeming millions in India belong to different racial stocks, profess different faiths and speak a variety of languages. Different physical setting in each region has resulted in diverse cultural traits in the form of differences in their food, clothing, shelter, customs, etc. The reorganisation of states on the basis of languages has not brought about much homogeneity as is identified by a large percentage of linguistic minorities in each state. All these

factors have bred factionalism and regionalism in the country. Group loyalties predominate and, seemingly, interests of the country get ignored.

(c) *Economic Imbalances*

There is sufficient diversity in the availability of natural resources in India. Equal attention could not be paid before independence for the economic development of each region. The economic imbalances are natural. Here disparities are discernible between caste and ethnic groups, port-towns and towns in the interior, towns and villages, hilly areas and plains. Poverty is not an exception but a rule. And the levels of poverty have created their own diversity.

ROLE OF GEOGRAPHY

In the changed set up, viz 10+2+3, geography of the home state is taken up in class III and geography of India in classes IV, VIII and X. In other classes world geography has been included. Whatever the unit of study, a geography teacher has to be careful that he does not overemphasise and exaggerate the significance of the home state or region and undermine the contribution of other states or regions. A feeling of unity should permeate every lesson. Whenever and wherever he gets an opportunity he should accentuate their national pride regarding the size, location, physical and cultural diversity of the country and make the pupils appreciate the pluralistic nature of our society. He should esteem and endorse regional interdependence in place of regional isolation; development of river basin and of sharing its benefits over inter-state river-water disputes and disagreements; the variety in multitude of cultures over monotony of single culture. Along with other teachers in the school he has to pay sufficient attention to such aspects of education as knowledge, understanding, attitude and action. Knowledge provides the basis for understanding and right action. The teacher has to endeavour to develop correct attitudes and high ideals among his pupils. Through his class room situations, the teacher by comparison and contrast, has to inculcate positive attitudes in pupils regarding the geographical attributes of India. While doing so he is to strengthen their feelings of love and service towards their motherland so that they learn to think for the country first and for the self last. Here are some aspects of the geography of India which can be emphasised to foster and instil in them qualities of citizenship and patriotism.

A Geographical Entity

The first fact about India that needs to be highlighted and extolled is the personality of India.

The three relief features—mountains, plateaus and plains—are in unique association in India and make it a distinct geographical entity. The lofty mountain wall in the north, besides acting as a climatic barrier, provides inexhaustible supplies of water to the plains for irrigation and other purposes. To the south the plateau is the store house of minerals. In between lies a vast fertile plain—the backbone of Indian agriculture. The natural frontiers, in the north and south are provided by the high Himalayas and the ocean respectively. Its location at the head of the Indian Ocean is enviable and so is its access to the sea.

The river-systems, whether originating in the Himalayas or peninsular highlands, traverse a number of states before entering the sea. They are symbols of physiographic unity of our country. They are not an exclusive asset of any one state but their benefits are to be shared by more than one state.

The other contributory factor of the geographical individuality of India is the well-defined Tropical monsoon climate, with dry winters and hot wet summers. The climate favours agriculture and cultivation which is the mainstay of the majority of its population. This also explains the predominance of rural population over urban population. India is a country of villages. The fickleness and variability of monsoon rain is also responsible for repeated floods and droughts in the country. The natural unity of India is a theme which must be given prominence in the day to day geography teaching.

In this unity we also perceive physiographic diversity. In a vast country with many variations of relief, soil, minerals, climate, natural vegetation and native animal life, this diversity is natural. Here we have shimmering lakes of Kashmir, coconut palm fringed lagoons of Kerala, wind swept highlands of arctic Ladakh and golden beaches of tropical Goa, hot dry desert of Rajasthan and hot humid deltaic areas of Bengal, snow covered Himalayan peaks and scrub covered Aravali hills. This physiographic variety is a geographical asset. The climatic, soil, mineral, vegetal and animal variations provide a strong economic

base for multifarious gainful activities. Within the bounds of India are raised temperate and tropical crops and the crops cultivated are subsistence and commercial. Here we have forests of hardwood as well as softwood. With elephants in Assam and camels in Rajasthan we have yaks in Ladakh. The chief fibre crop in deltaic Bengal is jute and the similar crop in Maharashtra is cotton. The long list of exported products is a proof of this variety

Economic Interdependence

No two areas on the surface of the earth happen to be alike. Some differences exist in the various elements of physical environment. So the goods produced too are different. In the complex civilization of today the needs of the people have increased manifold. All these cannot be completely satisfied with the produce of the same place. Further, the stress these days is on specialization. A particular area is devoted to the production of a commodity for which it is best suited. With life and living becoming increasingly complex dependence of one region on the other is also on the increase. This interdependence is a global phenomenon except in primitive societies. No region can claim self sufficiency in their material requirements. The economic interdependence can be inter-state and intra-state. Coal used in the factories of Rajasthan is obtained from Bengal or Bihar. The tea consumed in most parts of the country comes from Assam. Punjab and Haryana raise wheat for consumption in other parts of the country.

Economic interdependence involves two way traffic and is the basis of inter-state trade and commerce. One essential task of geography education is to bring home to school children the very basis of this interdependence and at the same time to glorify the dependence of one state of our country on the other. The wheat produced by a Punjabi farmer is consumed by a Kashmiri artisan whose deft fingers create fantastic patterns on a woollen shawl. This shawl is a prestigious piece of clothing of a Bengali factory worker. An air conditioner manufactured in a factory in Bengal provides the Punjabi farmer with cool comfort.

Common Destiny

In our country, where half the people are living below poverty level, sustained efforts are being made to eradicate poverty, hunger, disease, illiteracy and the like. A series of Five Year Plans have been launched

soon after independence. Much has been done to improve the living conditions of our people but much more still needs to be done in this direction. In river valley projects we have excellent examples of inter-regional development and cooperation. The electricity generated at Bhakra Dam is consumed by the states of the Punjab, Haryana and union territories of Delhi and Chandigarh. The water from this project is sent through Indira Gandhi Canal to distant parts of Rajasthan State. Madras city has suffered chronic water shortage for the last several years, due to repeated droughts. Recently an agreement has been signed between Tamil Nadu and Andhra Pradesh to divert some water from the Krishna river to Madras to meet the drinking water requirements of this city.

A large scale industry is set up in a certain state after considering the availability of resources, economic feasibility and other factors. Once established, the industry draws up engineering, technical and managerial staff from every part of the country. Disregarding its location, the industrial venture becomes a national enterprise open to every qualified and competent Indian. At the same time we must build an optimism in our school going children that India, when united, has the potential for emergence as a great political and economic power.

There are numerous examples available in our geography course which help in creating the feeling of oneness among our children. We are all Indians. Our destiny is being shaped for good at present. We are sharing the benefits of the programme of economic planning. In the prosperity of the states lies the good of the country and vice versa. Our hopes rest on Bhakras, Bokarós and Bombay Highs. Every discovery of a new gas field or oil bearing strata, commissioning of a river valley project and going into production of an industrial enterprise should fill him with dignity and delight. What India is giving him is to be made vivid to him. At the same time it is our duty to make him realise what his country expects from him.

To conclude, we know that India is a big country with a variety of physical and cultural features. This superficial diversity is characterized by an under current of unity. Geography teacher has ample opportunities to illustrate this unity in diversity with

reference to our country. "Instruction in geography should help at promoting accurate and wise thinking about the land and people of our country. an appreciation of interdependence of units within it, confidence in the country's capacity to grow into a strong economic and political power, pride in the richness of her resources including their size and above all a tendency to see things first and foremost in the context of the country as a whole", (The Nation, 1969). Such a thinking and understanding will surely help to develop a sense of genuine local patriotism in our pupils.

II

GEOGRAPHY AS A MEANS TO DEVELOP BROADMINDEDNESS, SENSE OF HUMAN BROTHERHOOD AND INTERNATIONAL UNDERSTANDING

"Education shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms. It shall promote understanding, tolerance and friendship among all nations, racial or religious groups, and shall further the activities of the United Nations for the maintenance of peace", states the Universal Declaration of Human Rights. This declaration demands the use of education to reinforce the mutual knowledge and understanding between the peoples which is one of the pillars of peace. Education through the teaching of various subjects is set with three inseparable aims that is to achieve a balanced development of the personality of an individual, to fit him into the social life of his community and to inculcate theoretical and practical knowledge as the basis for thought and understanding. It is not the intention of U. N. or UNESCO to set educators a fourth task but to redirect and reorganise the process of education, with its three aims, to serve the goal of international understanding.

Now, what do we mean by education for international understanding? An interesting answer to this query has been put forth by Dr. Loves (1956) in his famous address ".....in education for international understanding we should try to promote a comprehension of the ways of life, the values and the aspirations of all peoples of the world. And we should try to achieve an understanding of the requirements of living together on this planet. In this sense 'understanding' includes the necessity of comprehending our ways of living as well as the ways of other people. In short, inter-

national understanding is the ability critically and objectively to observe and appraise the conduct of men everywhere to reach other, irrespective of nationality or culture to which they may belong.....and to observe men of all nationalities, cultures and races as equally important varieties of human beings inhabiting this earth". This is a task of great importance and urgency and leaves us with only one choice in "*a race between education and catastrophe.*" In this connection international seminars are held regularly under the auspices of UNESCO to explore and assess the ways and means to achieve this objective.

THE NEED

Why this calmouring for education for international understanding ? What facts and factors, obtainable in the present day world, necessiate the development of broadmindedness and human brotherhood ? What prompts us to look beyond our national confines and national community into the big broad world ? What compels us to shed our narrow national interests and sue for international amity and cooperation ? Let us find an answer.

(i) Peace and Survival

The trail of human misery and suffering, material destruction and devastation, left by the World War II convinced mankind about the need for an international forum where all the nations of the world, through their representatives, could meet and discuss their problems and conflicts, take measures to defuse war and to strive for the maintenance of peace. The need for it is much more greater today than before. An unprecedented race for the invention and manufacture of sophisticated and lethal weaponry, both conventional and nuclear, has been going on since 1945. In his arsenal the latest additions are the rockets and missiles with nuclear warheads. The extraordinary power, in the form of fission and fusion bombs, amassed by man if unleashed will result in the annihilation of human race. The entire human habitat, under such circumstances, shall be divested of its organic and inorganic components. We are passing through a crucial phase in human history when man and his civilisation are facing greatest threat to their existence. Man, so to say, is bent upon self-destruction on an unimaginable scale. It is time for humanity to realise the futility of strife and the need for understanding the utility of brotherhood and

peace. He has to make a, clear cut, choice between survival and extinction for the slogan of the time is,

LIVE IN PEACE OR LIE IN PEACE

(ii) Shrinking World

The advances made in the field of technology and invention have revolutionized our concepts of time and distance. The speedy means of transport have brought the countries of the world close to each other. The places, with strange names, that were distant and unfamiliar, about half a century ago, have come nearer and become familiar. Hours of jet travel now separate one city from the other. The speedy movement of men and materials have proved helpful in bringing the lands and people of the world near one another. The rapid changes in the field of communications are characterized by establishing instant contacts. The happenings in one part of the world influence the stock market in the other. Similar is the effect of the events in one country on the life and activities of the other. Modern means of transport and communication are lowering and breaking barriers between the nations. They feel that they are no longer isolated entities but integral part of a world community. Our mental horizon has now widened beyond our immediate borders and it now encompasses the whole world. The world has, consequently, shrunk. It is no longer 'a great world stage' but a small habitat. The progress in air travel has reduced the size of our planet. My neighbour is no longer a person living next door, in a hamlet or town of Kashmir. He may be a Canadian lumberman or a ranch-worker in Argentina. Keeping in view the rate of international migration of technically qualified personnel and scientists, even from a state like J & K, if you ask a school going child where his brother is working, it should not surprise you if he answers, not Delhi, Kerala or U.P. but, Dubai, Kuwait or U.S.A. not with concern but with indifferent ease. His brother was here last month and they expect him again when his sister's marriage is settled.

During the mid-sixties of the present century India faced an acute shortage of food. It was replenished by liberal imports of wheat from U.S. The American wheat, of red variety, was the common cereal consumed in many parts of the country then. In a school examination probably in Gujrat, the question asked in geography paper was, 'Name

the wheat producing areas of India ?" The answer of one candidate read. "In India wheat producing areas include Punjab, Haryana, Western U.P. eastern Rajasthan and U.S.A." Perhaps, it was not a lapse on the part of the examinee but a natural feeling of the closeness of U.S.A. as an area of wheat supply. Here also can be traced an awareness regarding 'oneness' of the world.

(iii) Interdependence

"An industrial society, by its essential nature, is global in its scope and international in its needs. If it is to survive, it must draw upon all the world's resources and all the world's people must share its benefits. Our way of living is dependent on the co-ordinated economic activities of distant people. This is the concept of one world—of one community of interdependent people," remarks P.E. James. In the modern times no nation can live in isolation. It cannot meet all its requirements of food and industrial raw materials from the resources available within its national frontiers. The complexity of modern living demands exchange of goods between the peoples of the world. In this connection, every other day finds the establishment of trade treaties between one nation and the other. Geographical conditions are not similar all over the globe so we cannot expect any uniformity in the cultivation of food, fruit and industrial raw materials. Similarly different minerals are found in different parts of the world. Shortages and surpluses in the production of commodities is the hall mark of modern society. These need to be levelled through trade and transit. This is the basic factor involved in economic interdependence. Each nation has, constantly, to draw goods and materials from all parts of the world in order to meet the requirements of its people and of its industries.

How closely knit and dependent are the economies of various countries can be comprehended easily when we visualise the *Oil Crisis* of mid-seventies that had brought the entire world civilisation to a grinding halt. The ships cruising through the great waterways of the world form the back bone of international trade. No country, however big or small, can claim self-sufficiency, be it the field of agriculture or industry. A young man entering his office, one day, invited the attention of his colleagues to the new Digital Watch which he had put on that day.

Said he, "The wool tops for its cloth came from Australia and the synthetic fibre from West Germany. These fibres were woven into cloth in one of the factories in England. The cloth was tailored in Paris. The lining for the suit came from India, thread from Egypt, buttons from Holland and zipfastener from Japan." Amusing over his achievement he declared, "what a lucky guy I am that I gave employment to so many people all over the world."

Interdependence is not restricted to the field of economics alone but is well-marked in social, cultural and educational spheres. The role of UNESCO in this direction is quite commendable. Collaboration has become a watchword of present international links.

(iv) World Community

A Sanskrit saying *vasudaiv kutumbakam* reads in translation that the 'world is my tribe'. Ours is a common humanity and the entire world is my home. We are all fellow passengers on board a spaceship hurtling in space at a tremendous speed. We are first human beings before we are Americans, or Indians or Arabs or Germans. The rains brought about by the Monsoon winds fall in all parts of southern Asia in summer irrespective of the nationality or the religion or the race of people living there. River Danube serves as an important waterway in a number of European countries like Austria, Hungary, Yugoslavia and Romania. The Atlantic Ocean washes the shores of the continents of Europe, Africa and Americas. We have also inherited a common cultural heritage. Languages, sciences, arts, humanities, religions, discoveries and inventions have come to us from diverse quarters but all people all over the world have free access to them. Science, religion and knowledge knows no barriers. The benefits of these are free for all, without any restrictions, whatsoever. Understanding of the conditions under which people in different parts of the world live and work is essential for all educated and enlightened citizens. It is natural that we have respect and sympathy for all those who deserve it after all they are our brethren.

NATURE OF GEOGRAPHY

Different definitions of geography have been given from time to time. Despite these differences we are all agreed that the purpose of geography is to give each child a knowledge of the world, his country

and the people living therein. In a programme of education for international understanding it is envisaged that a child has a knowledge about the world and its people. In this respect geography excels all other school subjects. Social sciences, except history and civics, do not find a place in school curriculum but it is through geography that they have a foothold in elementary and secondary schools. Geography is based on correct and precise scientific enquiry. When a child is in contact with a geography textbook or a map he experiences a precision tool. By acquiring exact and accurate knowledge of the world and its people he develops such attitudes as tolerance and sympathy which constitute essential attributes of universal brotherhood.

Geography is defined as a 'synthetic study' or an 'integrating discipline' or 'holistic in approach'. Through its regional studies geography discovers and identifies the 'personality' of an area by associating the features and phenomena of that place. Geography, thereby, resorts to chorological synthesis. Most of these features and phenomena have been studied analytically in systematic geography. Geography helps us to know and understand the position of a country in the world, and the way in which its people are working and living. It also tells us about the natural resources available in that country, the number of people inhabiting it, the extent to which these resources have been utilised by its people and its problems and potentialities.

In geography emphasis should not be on mechanical memorisation of facts and figures but on the development of geographical sense. By geographical sense we mean a way of thinking or an attitude of mind. It is an ability to think spatially and to find causal relationships between phenomena of the earth's surface. The purpose of the acquisition of the geographical sense is to understand people living in various parts of the world and to have fellow feeling for them. A knowledge of geography is of utmost significance for a responsible citizen of the modern world particularly in view of the developments of the modern times in the fields of technology and science, transport and communication and continual exchange of commodities and ideas.

ROLE OF GEOGRAPHY

International understanding should not be mistaken for 'vague sentimentality' or 'suspect cosmopolitanism'. It is, in reality, 'learning

to respect all men, whatever they are ; learning to consider persons living in other countries or belonging to other civilisations as human beings and finding out how they live, eat, dress, work and play....." (UNESCO-1950). Here the problem likely to come up is the relationship between citizenship and loyalty towards world community. Chances of conflict between the two cannot be ruled out. But at the same time, we must know that the two—the loyal citizenship of one's own country is consistent with international understanding. Conversely, if international interests are ignored the national interests are likely to suffer. The qualities that we consider essential for citizenship are relevant to international brotherhood only in the latter case the canvas is bigger and broader. Some of these qualities are "a feeling for the welfare of others, sacrifice of immediate personal gains for common good, desire to cooperate with others by good means for good ends....." (UNESCO-1959) Again, a vital factor in international understanding is "the ability to regard the world outside one's own country and the people in it as 'here' and 'we' rather than 'there' and 'they.'" (Australian-1957).

In this connection Kothari Commission Report (1964-66) suggests that "The teaching of geography also should emphasize the unifying rather than the divisive aspects and underline the new concept of 'one world'. Both in history and geography the syllabus should bring out not only the political, social cultural, and economic features of the different countries that are studied, but also the process of intercommunication and cooperation between nations and continents."

In the following pages it is discussed how geography by its nature, can help inculcating such attitudes as broadmindedness, universal brotherhood and international understanding.

(i) Knowledge of the world

Geography as a chorological or space science is concerned with the study of surface of the earth. It cultivates in the child sense of space just as history develops in him the time sense. Both these qualities are essential for the right comprehension of the world.

In geography the procedure adopted is to describe a feature or a phenomenon present on the earth's surface and then to explain the same. The accurate knowledge of the lands and the people received by him

widens his mental horizons. The knowledge gained helps him to understand the conditions under which people of other lands live and work.

The stage on which drama of life is enacted has been considerably reduced in size on account of the progress in the field of aviation. Through a study of systematic geography the pupils have come to realise, for the first time, the spatial unity of this planet. This is an achievement of great significance.

(ii) Primary Needs

The natural environment offers its gifts, in the form of natural resources, to mankind. Man exploits these for his good life and living. But the rate at which these resources are utilized varies from country to country and region to region. For the utilisation of natural resources depends, among other things, upon his numbers, ingenuity, and stage of technological advancement. This is the common endeavour of all mankind irrespective of the fact whichever part of the world he has occupied. All people have similar basic needs (like food, clothing and shelter) and they are involved in a constant struggle to find ways and means of satisfying them. Here we share our experiences with other countries of the world to achieve greater success for improving the lot of the masses. The names 'China paddy', 'Japanese method of cultivation', 'Australian Merino', 'Jersey cow' are familiar terms in this part of the world. First two are linked with increased production of paddy in Kashmir Valley. The sharing of the experiences takes place between the advanced and the developing nations and also between the developing and the under developed countries. Increasing yields of food crops, problems involved in dry farming, oil exploration and the like are some of the many fields where nations share their experiences and embark upon joint ventures.

(iii) Interdependence

Relief and climatic conditions combine together to give rise to varying environments in different parts of the world. Each part specialises for the cultivation of particular crops for which it is best suited. Similarly, different countries are endowed with mineral wealth in varying proportions. A study of geography of the world presents a true picture of a country or a region, in this regard and reveals the

interdependent and complementary nature of each unit. The study also elucidates the need for sharing the surplus produce with those who suffer shortages. The imports and exports of a country indicate its areas of surplus and insufficient production. This disparity in levels of production and consumption is the basis of international trade. The interdependence is increasing day by day as is indicated by the increasing movement of a wide range of raw materials from one part of the world to the other. No country, not even an advanced country like U.S.A. or U.S.S.R. is self sufficient. Britain has to import most of its food and so has Japan to import iron ore, coal and petroleum. Here again geography reminds us of the need for international cooperation.

CONCLUSION

The revolution in the means of transport and communication, reality of the shrinking world, harnessing of nuclear power, increasing interdependence of the nations, greater need for cooperation and collaboration and other developments demonstrate that mankind has entered a new era in which narrow nationalistic concepts have to yield place to global concepts. Geography has an essential role to play in this transformation because of the valuable body of knowledge provided by the subject which, if taught well, can interest the child and help him to become a responsible citizen in this fast changing world. In this connection Briault and Shave remark, "Today technological and scientific developments are taking place at an unprecedented speed, increasing man's knowledge of the earth and causing modifications in his environment, and since these aspects lie at the heart of all geographical study, the geography teacher must consider actively and immediately what steps he should take to prepare the present generation of pupils for their new responsibilities as citizens of the world as well as of a nation."

REFERENCES

1. Address of Dr. W.H.C. Loves, Deputy Director General of UNESCO, to the American Association of Colleges of Teacher Education, Chicago 1956.

2. Australian National Advisory Committee for UNESCO *Education for International Understanding. A Handbook for Australian Teachers*, Sydney-1957.
 3. Briault, E.W.H. & Shave, D.W. (1960) *Geography In and Out of School*, (George G. Harrap)-179.
 4. Brubacher, John S. (1981). *Modern Philosophies of Education*, (Tata-Mcgraw)-144.
 5. Fairgrieve, James (1930) *Geography In School* (University of London Press).
 6. NCERT, New Delhi (1969). *The Nation and the School*-50.
 7. Report of Harvard Committee, (1958). *General Education in a Free Society*, (Cambridge)-4.
 8. UNESCO and its Programme-vii, (1950) *Geography Teaching for International Understanding*, Montreal, -27.
 9. UNESCO (1959). *Education For International Understanding*, Belgium,-11-13.
 10. *Universal Declaration of Human Rights*. Article 26, Paragraph 2, (Adopted by U.N. on Dec. 10, 1948).
-

2

METHODS OF TEACHING

Objectives or aims, curriculum and methods of teaching are the three props of education. It is the aims of education that are decided first of all. Aims determine the curriculum. The next step is to teach that curriculum as effectively as possible, in order to achieve the given objectives. This step involves the use of methods of teaching. Knowing that a child is a living, growing, developing, maturing personality it is essential to regard teaching methodology as something which is concerned with what the teacher does, as well as with what the pupil does. So the consideration of a method involves two processes ; teaching on the part of the teacher and learning on the part of the pupil. In presenting the curriculum or the subject matter to the pupils the teacher makes use of a method of teaching. Here a question arises. Which between the two, the subject matter and method of teaching, is more important ? The answer is that both are of equal significance. A good teacher is expected to have mastery of both. If teaching is to attain highest degree of efficiency a teacher has to be conversant with the materials of instruction, in his particular field. He should also have a sound grounding in all phases of method. It is desirable at the outset to know the origin of the methodology of teaching.

ORIGIN

Comenius, in seventeenth century, was first to plead that all instruction should be graded and arranged in natural order. (Bining and Bining—1952). John Locke, the English philosopher, established the basis of modern scientific psychology. But an outstanding contribution was that of Rousseau who through his *Emile*, laid the foundation of methodology of education. He laid emphasis on education that was free, natural and spontaneous. His ideas were put into practice by Pestalozzi,

who tried to psychologize instruction. He asserted that sense impression was the only true foundation of human knowledge and that education was a 'drawing out' rather than a 'pouring-in' process. He was followed by Froebel and Herbart who made substantial contributions in the fields of kindergarten and secondary education respectively. Herbart believed that learning consisted in the acquisition of an "apperceptive mass" of ideas. He approached the problem of education from the viewpoint of a teacher and gave a formal plan of instruction. The five steps of this plan were preparation, presentation, comparison, generalization and application. Herbartian philosophy and plan of instruction held its sway all over the world for a long period of time. It is still in use in this part of the world even now.

During the first quarter of this century Herbartian system of education came under severe criticism. A new philosophy of education emerged. To the main trunk of educational thought of Locke, Rousseau, Pestalozzi, Froebel, Herbart, Spencer and Huxley, were grafted the latest developments of modern education. The modern philosophy of education lays emphasis on the child and not on the teacher. Learning is an active process. It involves reorganising and reconstructing experience. The school is not only a preparation for later life but must be regarded as life itself. The experiences of the children in the school are to be socialized. The accent is on the consideration of the interests of pupils individually and collectively.

FACTORS

The following constitute chief factors of the philosophy of a method.

(i) *Child*

According to the modern philosophy of education a child is the central figure in the school. He is the most sacred thing about it. Learning, for which he comes to school, is the forte of the child. The teacher cannot substitute his role for the child in the learning process. The child has to do his learning himself the teacher cannot do it for him. "The teacher can teach him but, to put it ungrammatically, he cannot 'learn' him" writes Brubacher. The purpose of education, in addition to imparting knowledge, is to stimulate a pupil to make an effort to exert his potentiality for knowing and learning. With curri-

culum as a path laid for him, he has to tread it to reach the set goal. The effort involved in walking is the exclusive concern of the pupil.

There are certain characteristics of the process of learning. It is developmental in nature. It is a kind of growth. Through it an impression is left on his plastic mind. Learning helps in the acquisition of new behaviour patterns.

Interest plays a vital role in human activities. Literally, interest means that which "*is between*". In education, interest establishes relationship between two unrelated things like child and curriculum. Vital interest is inherent in a child. It is the duty of education to discover and develop this interest.

Motivation is an essential and basic part of learning process. Learning without mental activity is not possible. Learning is effective when maximum mental activity is taking place. Maximum mental activity is possible through strong motivation. Motivation, preferably, should be intrinsic.

A child is storehouse of restless and boundless energies. This hard fact of child nature cannot be ignored. In the past all efforts were directed to curb these. It is worthwhile and judicious to involve him in such activities where his energies are utilized and channelised rather than suppressed.

Another significant feature of learning is that learning does not necessarily mean knowing. It is not surprising to find a child not knowing what he has learned. Learning demands involvement and active participation. If we want to learn swimming we cannot learn by reading about it or by observing others swim. We have to get into water and make an effort to swim.

No two children are exactly alike. Child nature is diverse. Individual differences exist among children. His individuality needs to be respected for it is the source of his originality and creativity. It is not unusual to find children respond differently when placed in a similar situation. A good teacher cannot afford to overlook this important fact.

In spite of the individual differences among children we observe that there are some great similarities in them. In other words, each

child is unique but at the same time we find that all children have much in common. They have the same, kinds of, basic psychological needs. Children of each mental level, generally speaking, have specific skills, abilities and ideas in common. They may share even same attitudes and values. Some believe that these similarities, at times, outweigh their differences.

In view of these facts it is imperative that a knowledge of child psychology is basic to the acquisition of sound methodology of education. At the same time all methods of teaching should be based on psychological facts and principles. Further we have to contemplate characteristics of child nature, at a particular stage of his development, and plan or choose a method accordingly.

(ii) *Teacher*

A Teacher's primary job is 'to teach'. The term to teach here, has two connotations [Brubacher]. One is 'intention' and the other 'achievement'. Intentional teaching involves the use of a plan or a method. The rationale in the selection of a method should be accomplishment of the aim or aims of education. The method selected also has a close relationship with the curriculum. In short, method and material of instruction go hand in hand. While the teacher is teaching effectively it must be accompanied by corresponding learning on the part of the pupils. This is the achievement aspect of his teaching. In that case alone is his teaching successful. The teacher evaluates the impact of his teaching effectiveness by the learning outcomes of pupils.

A teacher, as a skilled and professional person, is one whose main job is to motivate, stimulate, direct, guide and evaluate the learning of others. He selects and arranges instructional materials; then guides and directs learning and finally evaluates. "The teacher is professional person, operating with professional skill and exercises professional judgement", remarks Anderson. The purpose of his teaching is to help pupils to learn. The quality of learning that is taking place in his students is the barometer of the quality of teacher's teaching. The teacher inspires and guides learning but each individual learns on the basis of his effort and experience. The teacher also helps his student to develop his potentialities and become a productive, cooperating and useful member of his society.

Three essential attributes of a teacher have been listed by Bining and Bining. These are personality, scholarship and professional competence. By scholarship we mean a sound knowledge of the subject he teaches. He must know much more than what the prescribed textook carries. He must also have wide factual and cultural background. Scholarship is acquired in an academic college and in the university post-graduate department. For proffessional competence the teacher has to study in a professional college. This, in our case, is a college of eduaction. Here he gets exposed to such diverse fields of his profession as methodology, psychology, history, philosophy and sociology of education.

While the teacher is arranging or presenting materials of instruction to the pupils he has to keep in view certain pedagogical maxims. Some of these are to proceed *from immediate to remote, from concrete to abstract and from factual to conceptual*. Man begins by comprehending things and passes on gradually to understand them as parts of the world around him. The things that he comprehends are concrete. Later on he understands them in view of his experience and familiarity with them and knows their nature and function. These then become abstract. In the geography teaching we begin with lands and people that lie close at hand in our state or country—in our home region. After completing this course we gradually move towards remote areas. All experiences should be direct in the beginning. These should be based on sense perceptions. When such instruction is wide and sufficient the next step is to develop concepts.

(iii) Curriculum

In the traditional division of curriculum the basic units are facts and skills. These are grouped into homogenous clusters called subject fields. Geography is one such curricular area. It has certain peculiarities which differentiate it from other subject-fields. In order to select or devise a method the nature of geography is to be considered. Geography lends itself to both individual work and group teaching. Here number of topics can be studied in the field and involve organisation of outdoor activities. Some themes are to be taken up as laboratory work. In it can be introduced problem solving procedure and also project method. The near and the concrete area of study is provided by the home region.

From it we obtain the factual material as well. This home region is studied, first hand, through exploration and observation. It can also be studied, second hand, through maps and other visual media.

Some methods in geography teaching belong to the province of history. Others have been taken from science. While there are several methods, which in form and nature are exclusively geographical.

No one method can be suggested as the best method for teaching geography or for that matter for the study of any school subject. There is no golden rule. Agreeing with Bining and Bining it may be said that, "Best method is that which arouses interest and effort, which develops self activity and initiative, which stimulates independent thinking and judgement".

In the following pages some methods have been selected for discussion.

I

STORY TELLING METHOD

This method is, in reality, the most fitting method for the teaching of history. History is the narration of phenomena which follow one another. It is the story of man. In history it is called *Narration Method*. Geography is a description of the phenomena which lie beside each other. The story telling method has been adopted for teaching certain aspects of geography at a particular stage of child's growth and development. It can be used in helping children to know the geography of lands and people of the contemporary world in the form of a story when they are most receptive to the latter. It can also be put to use for narrating the stories of exploration and discovery. These stories depict the deeds of heroism, courage and adventure of great explorers. They reveal man's capacity to brave dangers, challenges and ordeals to make known those parts of the world that were unknown. In a science course the method has been chosen for presenting life and work of great scientists and the stories of scientific inventions and discoveries.

Psychological Basis

At 6+ a child enters an elementary school. His first few years in the school are devoted to the development of reading, writing and reck-

oning abilities. By nine he is able to read with ease. At this stage he is interested in true to life adventures. Through his contact with other children and elders, through radio and television, his knowledge of the world begins to increase. He keeps on adding to his storehouse of knowledge continually and is in search for knowledge of distant lands and their people. During the period of his age from nine to twelve years his mental horizon widens. He is filled with admiration for the size, diversity and beauty of the world he lives in. He learns mostly through visual media and listens to descriptions with rapt attention particularly when it tickles his imagination. This thirst for knowledge is to be satiated by helping him to know the life and activities of man in different parts of the world and also the narratives of exploration which are full of thrill and excitement for him.

Phenomena that lie outside the direct experience of the child at this stage (9 to 12 years) are difficult for him to analyse and classify. It is, therefore, recommended to avoid a course of systematic geography at this stage. It is desirable to present to him details of food, clothing, shelter, transport and the means of livelihood, because he has not developed, as yet, maturity or critical faculty. It is difficult for him to understand the problems that confront the world today. It is advisable to place in his hands positive and constructive aspects of man's work [UNESCO-VII].

METHOD

(i) **Suitability** : This method in geography teaching is suitable for pupils of higher primary (III to V) and lower middle (VI) classes.

(ii) **Story** : One essential difference lies between the fields of history and geography. History in itself is a story. As geography is concerned with description, here the story is to be made. It is to be woven out of the fabric of geographical description. How best to do it ?

The ideal procedure is to select a boy or a girl, of the same age as the pupils in the class, of the distant country or a region under study. Assign him a name peculiar to majority of the people in that country or region. Natural regions of J & K State have been presented in the form of eight stories by the present author for inclusion in the textbook,

on Environmental Studies, for class III of the State Board of Secondary Education. The names selected for the boys of some natural regions of J & K are Pradeep Kumar (Jammu Plain), Vijay Singh (Jammu Kandi), Din Mohammed (a Gujjar boy), Riaz Ahmed (Vyeth Plain) & Thondup Sonam (Ladakh). This boy is to be made the central figure : the hero, of the story. Everything else is to be presented round this boy as the pivot. The country, the region, his parents and other activities are to be identified with reference to him viz. Ali's father, Chiangs fields, Sato's country and Maria's ranch. (Social Studies book for class V).

The geographical facts are pieced together in the form of a story. Accurate descriptions of all features of environment together with the human activities are to be narrated. This narrative must be simple, informal, orderly and interesting. As geography is the study of reality the details must be authentic and genuine, accurate and precise.

(iii) Teacher.

The success of this method squarely rests on the teacher and the quality of his narration. He has to be a good story teller. In geography he has to be careful, too, for he cannot afford to replace facts by fiction. He has to tell a story and not to read the text of a book. With lucid narration and a natural style interspersed with histrionics, the teacher is sure to captivate the entire attention of the pupils. What he tells them in words they simultaneously translate into images and get a vivid and clear picture of the lands and the people or the unexplored lands. The lesson becomes so lively and interesting that pupils wait anxiously for the arrival of the teacher for the next story.

Teacher's role as a story teller is now becoming increasingly important. With the joint families fast crumbling and breaking into smaller units—me, my wife and children—the institution of story-tellers in grand parents and elderly aunts has disappeared from the scene. The parents of a child, today, are so involved and preoccupied that they have neither time nor patience to satisfy this natural urge of a child at that particular stage of his life. With doors closed for story-telling in the family he comes to teacher with added expectations.

(iv) Pupils.

Pupils, though passive listeners in a narration, have much to achieve mentally rather than physically. His intellect and emotions, feelings and

imagination get activated. The total effect is that he feels that the geographical scene related by the teacher lies on the other side of the school fence or across the road. If his reading ability is sufficiently developed he hunts for the requisite story books, reads them and enlivens the scenes vividly. His imagination can get fully developed and foundation shall be laid for later day geography course. His love and interest for the subject also develops. Whenever he gets an opportunity or the necessary reading material he keeps on adding to his geographical knowledge: He listens to radio and views T.V., when geographical programmes are on, with additional zest and care.

(v) Aids

Frequent use is to be made of teaching aids like globe, charts, pictures, photographs, film etc. At this stage for the location of a country in the world a globe, preferably a slate globe, is to be used. In case of a part of a state or a country an atlas map must be given first preference. As far as possible use of the wall map at this stage should be avoided. On the globe or the map the country need not be named directly but identified with the central figure of the story as for example it may be indicated as Ali's Saudi Arabia, Chiang's China, Sato's Japan and Maria's Argentina. Pictures and photographs showing dress, articles of food, furniture, houses, a family scene, animals, vegetation etc are essential for developing imagination. The children should not carry hazy and erroneous notions about geographical facts. Display of visual material before and after the story shall be sufficiently helpful.

II

OBSERVATION METHOD

Geography, like other sciences, has a methodology peculiar to it. This helps in carrying out investigations efficiently. The principal aspects of geographical method are : (i) to observe, (ii) to record, and (iii) to interpret. The technique of obtaining geographical information by direct observation is basic to the subject. Through observation the learner is brought in close contact with geographical facts. It is really difficult for pupils in a geography class to understand some basic principles of the subject if they have not been given an opportunity to observe processes or phenomena at work. We should

bear in mind that the geographical descriptions in text books are based on the observations of some people who have already visited those countries or regions.

Significance

Art has been defined as representation of the reality and science its explanation. Observation is fundamental to both artistic expression and scientific enquiry. In this connection A.B. Alcott remarks, "observation more than books, experience rather than persons, are the prime educators. Observations have a close connection with sense-experiences". Observations, among other things, constitute direct experience of the real and concrete things. Experience forms the core of John Dewy's philosophy of education. According to him, "An ounce of experience is better than a ton of theory, simply because it is only as an experience that any theory has vital and verifiable significance". Geography is the study of the lands that exist and the people who really live. Geographical knowledge is based on the study of these real things. These can be seen first hand at any time, if we so choose. Briault and Shave remark that, "Geography has a natural appeal to young minds because its subject-matter is contemporary and realistic. It is not, *to begin with*, theoretical; it does not *to begin with*, depend upon imagination or conjecture or intelligent guess work. It can all be seen first-hand, now, in this day and age, by those who have eyes to see....."

Psychological Basis

In order to comprehend the psychological basis of observation method it is desirable to know how learning takes place. It is through our senses, called as the windows of our soul, that we are in continual contact with the material world. All learning is accomplished through sense organs, be it the eye, ear or nerve endings in our skin, nose and tongue. The sensory impressions are the basis of knowledge about the world around us. Without them no awareness is possible. They are the means of perception. In perception we apprehend objects, events and places. The impressions made upon our senses by stimuli from our environment are translated by us into their awareness. The physical objects as we know them through sight, sound, touch, smell and taste are the products of our percepts. Perception, therefore, is the foundation of learning. Multi-channel sensations

blend together to give rise to effective perception. Understanding emerges from perceptual experience. Our understanding of objects, places and events is a direct outgrowth of our ability to perceive. Understanding leads to thinking. Perception, finally, helps in attitude formation. The sequence in which these mental processes are taking place is that experience leads to understanding and the latter form the basis for thinking and ultimately for attitude formation. The basis of understanding, thinking and attitude formation is real experience. From this we can safely infer that "*no experience, no learning.*"

Experiences are of three kinds. The first is direct or firsthand experiences of the objects or places. The second is the indirect or contrived experiences and the third symbolic experiences. In the learning process all the three types of experiences are equally important. But the order in which these take place determine the rate and progress of learning. In the initial years of child's life all learning is based on direct experiences. Then follow the contrived experiences in which a child reduces the real objects to his scale. This is manifest in the manipulation toys. Symbolic experiences or use of reading material, come last of all. In classroom teaching, too, the direct and representative experiences must precede the use of the printed symbols. As the child advances in years the instructional material must be interspersed with such experiences. Language, undoubtedly, is a great invention but it is an inadequate means of helping children acquire knowledge and understanding. The written or the spoken word can take on understanding or comprehension only on the basis of experiencing. "Children and young people who read, must have wide opportunities for the direct experiencing or contrived experiencing of those things, events processes or ideas to which the printed symbols refer". [Wittich and Schuller] Divesting the reading material of regular and frequent experiencing leads to verbalism, a malady that has overpowered instruction in our schools. Verbalism refers to mechanical reading without understanding. It is an academic crime. Every effort must be made to do away with it. Throughout his stay in the school a background experience must underlie the comprehension of the printed word.

The geographical facts phenomena and processes lie outside the four walls of the classroom and constitute the real, concrete world in which the child finds himself. Observations form the essential foundation of geographical learning. Children must be provided opportunities to observe these first hand or through their reproductions. Geography teaching must begin with observations. If we proceed without it, the method adopted shall be unscientific besides being unpsychological.

PROCEDURE

The underlying theme of this method is to put pupils into real situations so that they learn themselves. They do not merely look at them but look through them and put to use what has been observed. The sense of reality in geography can only be felt and realised when pupils have personal experience of the geography that surrounds them. The children move out of the classroom and discover some geography. This firsthand experience, in the beginning, is to be carried out in groups under the care and guidance of a teacher. Observations can also be carried out individually, particularly, by grown up children with sufficient experience. Presence of the teacher does not, in any way, mean any direct teaching by him. The emphasis is on pupil activity, on self learning. When children observe people living and working and streams running and overflowing, in the neighbourhood of the school or in the home region, they understand that geography is the study of the lands that really exist and the people who actually live. They get sufficiently interested in what surrounds them. They also learn best from those things which capture their imagination. So the observation method involves pupil activity carried out outside class room, under the guidance of teacher, where pupils learn geography while in contact with it. Such outdoor observations are not always possible. Observations are also carried out within a class room with the representations and reproductions of geographical facts and phenomena. Here use is made of specimens, models, maps, pictures, photographs and other visual media. The observation method, which we undertake whether outside the classroom or within it, is fundamental to correct and easy understanding of geography. The poison of bookish and academic education has almost killed geography teaching in the schools and observation method can serve as an antidote. No teacher of geography

can afford to dispense with this method. It should form an essential and indispensable feature of a school geography course at every stage.

This method comprises three major categories of activities (i) Direct observations within the school campus, (ii) Direct observations away from the school, and (iii) Observation of second hand material.

(i) Within The School Campus

Most of these observations are carried out during the period meant for geography teaching. This does not interfere with the school timetable nor does it disturb the teaching of other subjects. Minor changes, here and there, may have to be made but these are often overlooked because it is obligatory on the part of the faculty members to honour each others commitments. A number of observations can be conducted within the school campus but only a few of these shall be highlighted here.

(a) *Survey and Map Study* Within the school compound children can be given an idea of surveying and map making. They shall be asked, as a first exercise, to draw a plan of the school compound by mere observation. In the plan prepared the teacher has to see that the relative size, the length and breadth, of the compound is truly shown. Next step is to introduce an idea of measurement. For it use shall be made of 'steps'. One boy counting them and another noting them. A tape may also be used for measurement. At a later stage chain and tape survey shall be adopted for drawing the plan. This shall be followed by inserting the details in it. Symbols shall be used to show different features like hedges, fences, roads, paths, flower beds, lawns, trees and buildings. Use of compass for finding direction must also be made. In this way they will understand the preliminaries of map making. Study and interpretation of maps in the upper classes gets facilitated thereby.

(b) *The Sun* An observation of paramount interest for the children is the earth movement in relation to time and seasons. This can be done by following the apparent movement of the sun in the sky at different times in a year. This observation is conducted with the help of a vertical pole fixed permanently at any convenient spot in the

school compound. The vertical staff casts a shadow of different lengths and in different directions varying from hour to hour, month to month and season to season.

The first simple observation is to know the position of the sun in the sky at the end of every hour during the school working hours. The position of shadow may be marked at an hour's interval on the ground. The length of the shadow goes on decreasing in length as we proceed from morning to noon. At noon it is the shortest. In the afternoon the shadow lengthens again. This indicates the varying angle of sun rays during the day.

The shadow of a person at noon can be used for finding direction. The simple procedure is to stand facing your own shadow. Stretch both your arms parallel to the ground, at right angles to your shadow. You are facing the north and east lies to your right, so on and so forth.

Noon time show of the vertical staff on spring equinox (March 21), summer solstice (June 21) and autumn equinox (Sept. 22) be observed and difference correlated with position of the sun on the equator, the tropic of cancer and the equator respectively. If the position of the shadows is fixed on the ground permanently with the help of pebbles, the shadows may be observed again next year. This will convince the pupils about the order and system present in natural phenomena. Other observations regarding local time and finding the latitude of a place can also be carried out with the help of the sun.

(c) *Weather* Weather presents a fascinating study for school children. In the lower classes of secondary school emphasis should be over qualitative observations. Quantitative procedures can be introduced in the higher classes.

Children be asked to note the weather everyday. A record of same may be maintained on a special note book. Symbols may be used for this purpose. Sunny weather may be indicated by a circle, overcast sky with shaded circle and rainy weather by the sketch of an umbrella and the like. This daily weather record shall be analysed, to know the frequency of weather elements, at the end of every month or every season. Clouds may be observed and named as fair weather clouds, rainy clouds, storm clouds etc.

For use by upper classes a weather station may be set up in the school. This comprises six's maximum and minimum thermometer, barometer, wind-vane and rain gauge. The elements of weather may be observed and recorded daily. Comparisons with the figures broadcast from radio can be made. Such observations can help in the explanation and understanding of weather conditions at other places.

(ii) Outside the school

Such activity called excursion, field work and outdoor work, is essential for all classes in a secondary school. But for the administrative, organisational, technical and financial difficulties involved this is an ideal method for teaching geography. Nature is the geographer's laboratory. As all geographical phenomena lie outside the classroom, they must be observed on spot. Excursions unfortunately are associated with recreation alone. The excursion that we talk about lays stress on outdoor work and observation besides recreation. "In some degree we are all geographers", says Prof. Debenham, "and half of us are explorers by nature. There is a fundamental urge in us to go some where and discover what is there.....this impulse is almost universal in sage or savage, child or grown up.....The keenest natural geographers in the world are children." In certain parts of the world field work has been made a compulsory item of the geography syllabus. Field work helps a child to realise that what he is asked to do or to learn is so closely linked with the world of reality. *Unesco Source Book of Geography Teaching* has suggested some exercises on field study.

(a) *Working around the School* :—This field study is restricted to the school neighbourhood where pupils will be at work for the duration of the geography period. This activity can be taken up by pupils of 10 to 12 years age. It is connected with correlating the features shown on a large scale map with those observed on the ground. In the absence of a large scale (1 : 2, 500) map, the teacher is to prepare a sketch map for this purpose. The sketch map should show all the prominent features of the locality under study. During the walk through the given area necessary entries are to be made on the given sketch map. When back in the classroom a fair copy of the map is to be prepared. Symbols and colours are used to record observed facts. It may be

analysed for the patterns and relationships, if any. What has been observed and recorded needs to be interpreted.

(b) *Half a day's work* :—This is another activity in which pupils of 12 and 13 years, will walk through an area in order to carry out the field work. The time spent will be half a day. Pupils will have some definite purpose and programme of this field work. In addition to a map, they need a questionnaire. On their return they will interpret their recorded observations regarding for example the nature of the area. Other activities which involve absence of one or two days from school are :

- (c) *Field Work in Urban Area,*
- (d) *Field Work in Rural Area,*
- (e) *Visit to a Factory*
- (f) *Visit to a Meteorological Station*

The method helps pupils to observe geographical facts accurately and correlate what has been observed in the field with maps and other visual media. During his field work in the home region he observes differences in the life and activities of the people. He traces these differences to their environment and man's response thereto. When he reads about the different ways of life and living of people in distant lands he has every reason to infer that these must be because of the different environments obtainable there. It is not possible to carry out all the lessons and exercises listed in this or other books but it is in the larger interests of geography that this method be followed in spirit if not in letter. The teacher should be always on the look-out for an opportunity to take his pupils out for direct observations. This enables them to lessen their entire dependence on book learning. [For details of excursion method consult chapter 3]

(iii) *Second hand material*

In view of the difficulties involved in carrying out field observations direct observation of the second hand material like maps and globes, graphs and films is the common practice that is effected in the schools. Geography has to be learned inside the class room as well as outside it. The teacher should see that pupils obtain as much information for themselves as possible, in fact, under his guidance, from these indirect sources.

In his day to day teaching in the class room the teacher has to make sufficient use of visual and audio-visual media and allow pupils to discover facts for themselves instead of telling them. The teacher can help them in this search for knowledge by asking them series of questions on these aids. Here the teacher will ask and the pupils will observe, search, investigate, examine and tell.

Teacher

Briault and Shave have cited an example of two teachers with contrasting attitudes towards their pupils. One attitude is, *I know, you learn* and the other is *I will help you to learn*. The first smells of authoritarianism and is typical of a teacher who either depends on telling method or textbook teaching. The second is expressive of an activity method. In the observation method the teacher's role is that of a friend and a guide. Walking and rubbing shoulders with them the teacher also poses to be an explorer, a discoverer and fellow searcher for truth. When approached he greets them with a smile and helps them to find out the truth. His advice and guidance is flowing freely only when a request for the same is made or when he feels that the pace of progress in case of some pupils is too slow.

Pupils

Pupils are actively participating in the observational work inside and outside the classroom. They are curious to learn new facts and principles. Learning on their parts is natural and impressions everlasting. They get a thorough grounding in geographical methodology—viz to observe, to record and to interpret. The repeated observations lay a strong foundation for the easy comprehension of future geography course.

III

COMPARATIVE METHOD

An examination of the lately introduced geography syllabus, under 10+2+3 educational set up, reveals that formal geography is taught for the first time in class III. Here through a course on environmental studies the pupils are introduced to the home state. In IV class, through environmental studies, geography of homeland is prescribed. In the last year of primary stage, that is in class V, he knows the world through case studies of its natural regions. By the end of

primary school a pupil, who drops out, has a working knowledge of the geography of the world.

In middle classes the geography course includes the study of all the continents of the world in addition to the geography of homeland prescribed in class VIII. In IX class general geography based on man-environment interaction is being taught. The 10 year school ends with the study of homeland in class X. Thus we begin with home state and homeland and gradually move out-wards towards the world. The advantages of such a procedure is that we start geography from that part of the world which can be seen and studied firsthand by the child. On the basis of his observations (detailed in the previous section) we make him to know other parts of the world which he cannot see directly. The procedure employed, to carry him from an area that is known to him to those areas which are far away and unknown to him, is the comparative method. Comparative method is not confined to geography teaching only but is employed in all branches of knowledge, arts, humanities, philosophy and sciences.

Psychological basis

This method is based on the laws of learning, particularly the *Law of Analogy*. According to this law, "an individual responds to a new situation on the basis of the responses made by him in similar situations in the past". The individual makes responses by analogy or comparison. The new knowledge acquired by a pupil is linked or associated with the knowledge that has already been gained by him. He, therefore, learns by association. Through comparative method all facets of a topic, under study, are surfaced which otherwise might pass unnoticed. Learning through this method becomes natural and easy.

PROCEDURE

In geography comparative method is used in two different situations :

(a) In certain topics the comparative procedure is inbuilt. There the subject matter in the textbook is arranged in such a manner that the similarities and differences receive a detailed treatment. One such topic is the study of three southern continents. The three southern continents —Australia, Africa, south of equator and South America—have certain

features in common so far as their location, relief, climate and human activities are concerned. But they are not without their differences. Sheep rearing and wool production is the predominant activity in Australia, but not of the same magnitude in South Africa or South America. Comparisons contribute a lot towards the quick comprehension of the salient features of the geography of these three southern continents. At the end of a discussion on the natural regions of India—the Northern Mountain Wall, the Great Indian Plain, the Plateau and the Coastal Plains—a comparative study inevitably crops up between the drainage of northern and southern India, the geography of Malwa Plateau and the Deccan Plateau, the eastern coastal plains and the western coastal plains. While talking of the densely populated industrial regions of the world we strike a comparison between western Europe and eastern U.S.A. In a topic on ocean currents, the warm Gulf Stream of the Atlantic Ocean is often compared with the Kuro Siwo current of the Pacific Ocean. There are numerous examples of such subject-matter comparisons available in a geography course which the teacher has to deal with. He trains the powers of critical appraisal of his pupils. In the early stages he has to initiate children into such activities but once they are in it, it becomes their second nature. At the end of every topic they resort to comparative study.

(b) In the next situation the teacher has to make a deliberate effort to use the comparative method during his classroom teaching and outdoor activities. It is psychologically sound to present new knowledge or information by linking it with the existing content of the mind. Here the geography of the home region provides the base. In his every day teaching the teacher often refers to the home region when he has to explain or illustrate a point. He often asks them questions on home geography to elicit necessary information from them in order to build his lesson. At the end of the discussion he again brings in comparisons to elucidate how the region under study resembles or differs from the home region. A thorough knowledge of the home region, in terms of facts and figures, is the essential prerequisite for the success of this method. This involves a deep understanding of all the facets of its physical and human geography from relief to population, climate to production. There is hardly a lesson in which use is not made of the comparative method.

The comparison can best be made with the help of the statistical data relevant to the topic. Statistical information for young learners as such, is abstract, uninteresting and sterile. It becomes attractive concrete and meaningful when presented through diagrams and graphs. The statistical data may appear difficult to them. But when translated into visual representations it can be followed easily. A mere look at the graph or diagram can convey the right message to the pupils. The visual impressions followed by explanation will stay longer with them.

While comparing two places, processes or phenomena we must accentuate their similarities as well as differences. Therein lies the success of comparative method. It is customary to call Kashmir as 'Switzerland of Asia'. This statement is likely to convey the impression that both the places are alike. They are. Both are hilly and mountainous, have mild summers and cold winters; abound in lakes and streams, waterfalls and glaciers, forests and meadows. Both are known for their scenic splendour. Both attract tourists. Switzerland is bounded by Germany in the east, France in the north and the west and Italy in the south. In J & K the boundaries of India touch such neighbouring countries as Tibet in the east, China in the north east, Afghanistan in the north west and Pakistan in the west. This accounts for their geo-political significance.

But this is not the complete picture. The basic physiographic plan on the two places is quite different. Kashmir comprises a mountain girdled plain with rich productive soils. Switzerland mostly consists of a mountainous plateau bordered by a great bulk of the Alps on the south and Jura Mountains on the north west. Agriculture is the mainstay of the majority of the people in Kashmir, while the people in Switzerland are engaged in manufacturing and trade. Switzerland though over populated is a prosperous country.

Switzerland has an area of 41,340 sq. km. and a population of 63.85 lakhs. Swiss plateau called Mittelland is drained by the river Aare and its tributaries. The large lakes are the Geneva, Biel, Neuchâtel and Constance. In the Swiss Alps the highest peaks are Mont Rosa (4630 m.), Dom (4550 m.) and Matterhorn (4490 m).

Switzerland is a densely populated mountainous country with limited natural resources. The only mineral exploited regularly is common salt. The progress in manufacturing and tourist industry have been possible because of abundance of hydro-electric power, which runs factories, chair-lifts, ski-lifts, aerial cable ways and trains. The total length of electrified railway lines is 8,000 km).

Comparative method serves as the spring board for illustrating and demonstrating areal differentiation. It constitutes a regular feature of geography teaching at all levels. Every conscientious teacher puts it to best possible use.

IV

LABORATORY METHOD

Geography as the study of man in environment demands a deep and clear understanding of the natural environment. Natural environment is studied by a number of sciences like physics, chemistry, biology, meteorology and astronomy. Physical geography, the branch of geography concerned with the study of environment, draws heavily from these disciplines. The method to be adopted for teaching this branch of geography must be akin to these sciences where the methodology involved consists of performing an experiment, observing the results and drawing inferences. The procedure followed is called the laboratory method. It is a method based on pupil activity or involvement where learning takes place by doing ; where telling is reduced to minimum. In such activity method the head and the hands work in close coordination. The method forms a basis for the development of fundamental concepts of geography particularly in relation to the movement of the earth in space, the natural forces working on, in and around it, the movement of air and water and the like. Geography teaching without these basic concepts becomes a mass of dull and uninteresting facts. The number of facts, in geography, to which a pupil is exposed is unlimited and if he is to grasp the salient features of his environment it is necessary that these facts are reduced to an orderly and coherent system. In this connection Welpton remarks, "A knowledge of facts has value only when these facts are interpreted by

principles that underlie them and give them wider, deeper and more rational meaning. Such principles bind into a rational unity of experience of seemingly widely different character”.

Psychological Basis

As a child, a pupil's activity is largely perceptual. He is concerned with material things that surround him. But during his stay in the school his activity is not entirely perceptual. As soon as he begins to ask 'why' and 'how' of things he passes beyond the perceptual stage to the conceptual stage. His perceptual activity is inseparably united with conceptual activity. Concepts are regarded as the most important tools of our thought and expression. Concepts bring economy to thinking, reasoning and problem solving behaviour of a learner. They help him to acquire, with ease and facility, knowledge and skills. The significant role of concepts and concept formation has been put forth by James Lawther in the following words, "Successful achievement in fields of human learning would be impossible without concepts as tools of thought. Only by their means can experiences be labelled, identified, classified and organized. Understanding depends on this association". Pupils neither understand nor retain unorganised factual material. These facts need to be classified under their appropriate concepts and mentally filed for use.

Concepts in geography, in relation to environment, are formed in a number of ways. The most significant method being to provide them with varied experiences in such activities as observation and demonstration. In the laboratory method the concept formation is aided by their whole hearted participation in a demonstration or in an activity which makes use of the underlying principle of this method.

Experimentation in Geography

The use of laboratory method in teaching topics of physical geography needs to be clarified at the outset. It should not lead one to believe that in geography we can have similar situations as are obtainable in physics, chemistry or biology laboratories where we find pupils working in pairs on a table, with apparatus, appliances, or chemicals, performing experiments. There are certain inherent characteristics of geography that differentiate physical geography teaching from the teaching of other natural sciences. The first and fundamental is that the earth, which

is the object of study of physical geography, cannot be brought into the laboratory for experimentation. We can, at best, use a replica or a miniature model of the earth for this purpose. This is the globe. Most of the concepts concerning the earth in space, its motions, the location and distribution of continents and oceans, the graticule of lines of latitude and longitude etc. can be formed only with the help of a globe. So in the demonstration of facts and principles in a laboratory, the place of the earth is taken by a globe.

The second difference pertains to the purpose of natural sciences. Their main aim is to prove the why and how of natural forces, principles and processes. We in geography begin where the natural sciences end. We base our arguments on the results and inferences of the natural sciences. For example in a topic on measurement of atmospheric temperature we make use of a Six's maximum and minimum thermometer. Its construction and working together with different temperature scales, in use, is the job of a physics teacher. We record the temperature with its help on some day or days. With the noted readings we draw inferences regarding the mean daily temperature or the daily range of temperature etc. After a few exercises of recording temperature, with the help of six's maximum and minimum thermometer have been carried out by the pupils and the mean and range of temperature calculated, we can now present them with temperature data of a particular place or a region. On the basis of the experience gained by them they will make necessary calculations and draw inferences. In this connection they may have to draw graphs and diagrams to make the relationships and variations visible and vivid. Experiments, in the strict sense of the word, cannot be carried out in geography. Here in the laboratory work emphasis is on pupil involvement as against his passivity in the telling method. Map making, preparation of graphs and diagrams constitute other exercise of this method. Laboratory techniques in geography, therefore, involve simple experimentation or demonstration, processing of data and preparation of models and graphs.

It is time to take notice of the apparatus available for use in geography laboratory. Most of the schools have no provision for the purchase of geography material. This in no case should stand as a hindrance in implementing laboratory method. Part of the apparatus

can be borrowed from the school science laboratory. The rest can be improvised. In the absence of a globe, a football, a cricket ball or any spherical object can serve our purpose. In the absence of electricity and electric bulb a candle can be used as a source of light. In the preparation of a model of the solar system, the planets can be made, to size, out of ordinary clay by the pupils. Improvisation of apparatus demands teacher's resourcefulness and his ability to tap the urge of construction and the skills of his pupils.

PROCEDURE

Before the procedure for laboratory method is laid out, it is desirable to know the type and magnitude of laboratory work selected for various classes. A perusal of the NCERT books prescribed for middle classes reveals that in each class first four chapters are devoted to a systematic study of physical geography. These constitute the main items of laboratory work.

Class VI

1. Preparation of a model of solar system showing the relative size and position of each planet and their orbits.
2. Preparation of a model showing the sun, the earth and the moon in order to explain the terms star, planet and satellite.
3. Rotation of the earth. A demonstration of the daily motion of earth on its axis.
4. Revolution of the earth or its annual motion round the sun.
5. Latitudes and Longitudes.
6. A systematic study of the globe based on a questionnaire.

Class VII

1. Demonstration of convection in air.
2. Demonstration of causes of winds with the help of ventilation apparatus.
3. To investigate maritime and continental influences in climate.
4. Land and Sea breeze—demonstration of differential heating and cooling of land and water.
5. A working model of a volcano.
6. Identification of rock specimens.

Class VIII

1. Study of Celsius and Fahrenheit scales.
2. Recording of daily maximum and minimum temperature.
3. Collection and measurement of rain with the help of a rain gauge.
4. Study of Barometer and wind vane.
5. Preparation of temperature and rainfall graphs.
6. Calculation of range of temperature—daily, monthly and annual.

Let us illustrate a few of these items which are to be taught by laboratory method.

(a) *Rotation*: The apparatus required for demonstration of rotation of the earth consists of a globe fitted on a stout base, and properly inclined, an electric bulb or a candle to serve as a source of light. The essential condition for the success of this demonstration is a dark room. The globe is to be placed in front of the class on a table, high enough and in full view of the class. The axis, its inclination and direction of the motion of the globe is to be shown first. The pupils should be directed to rotate the globe in the desired direction. The globe rotates from west to east on its axis. Pupils must know that the axis is an imaginary line that passes through the centre of the earth. If extended, it projects out of the earth at the poles. The north pole of the earth always points in the direction of the pole star.

Next a lighted candle is placed in front of the globe in a room that is completely dark. The circle of illumination covers the part of the globe that faces the candle. For illustration let us identify places like Tokyo, Delhi, London and New York on the globe. Hold the globe in a position so that Pacific Ocean faces the candle. Now rotate the globe slowly. The circle of illumination passes from water to land. Here ask the pupils to name the country where the first rays of light fall. It is the easternmost country in Asian continent. They must know why it is called *the land of the rising sun*. Locate Tokyo in it. At this stage find out the position of Delhi, London and New York in the zone of light and area of darkness. Draw necessary inferences on the basis of this observation, Use such terms as sunrise, sunset, forenoon, afternoon, evening, morning, midday and midnight.

Repeat these observations at four successive positions (it can be more also) when each city viz. Tokyo, Delhi, London and New York lie exactly in front of the candle. More cities can be selected by the pupils depending upon the interest aroused by this demonstration. They will record the timings at these stations in each phase of the demonstration. If Sato, Ramu, Charles and George is the name of a Japanese, Indian, English and American boy respectively, let us see what other boys are doing when Ramu in India is going to school. In upper classes a corollary to this demonstration is the preparation of a world clock. The demonstration may be repeated so long as most of the 'why's' and 'how's' stand answered.

(b) *Land and Sea Breeze* : The underlying principle of this phenomenon is the differential heating and cooling of land and water. An experiment needs to be conducted in the geography class for this purpose.

The apparatus consists of beakers, tripod stands and spirit lamps ; two each. Place equal quantities, say 100 gms, of water and sand one in each beaker. Place each beaker on the stand and heat it over the spirit lamp for equal time (say 5 minutes). Direct pupils to feel the contents of each beaker with first finger of each hand. Which of the two is at a higher temperature than the other ? what inference do you draw ? Sand (representing land) heats much more quickly than water (representing sea).

Now heat the beakers, each containing equal quantities of water and sand, for ten minutes. Remove the spirit lamps and allow the contents of the beakers to cool for same time (say five minutes). Ask the pupils to feel the contents again. Which of the two is at lower temperature ? which of these, sand and water, has cooled quickly ?

Making this as the base, draw a diagram of a costal area to indicate day conditions with sun shining overhead. High temperature means low pressure on land and vice versa over sea. In which direction does air flow ? It flows from areas of high pressure to areas of low pressure. In which direction does air flow during the day near the coast ? It flows from sea to land, hence the *sea breeze*. Conditions obtainable at night can be presented through another diagram of a coastal area in which the place of the sun shall be taken by the moon.

The success of these demonstrations depends upon several factors which no teacher of geography can ignore.

(i) It involves adequate teacher preparation. The teacher must test the apparatus before use. He is to perform the experiment one day before and try all those steps which he intends to demonstrate in front of the class. The dark room must be really dark and the globe rotating on its axis. The failure of a demonstration in the presence of the class is going to do lot of harm. The pupils lose faith in the abilities of their teacher, truth of the scientific facts and in realism in geography.

(ii) For a demonstration a stout and high table and apparatus in working condition are essential. The apparatus needs to be used with caution and care.

(iii) The very soul of this method is the pupil participation and involvement. The teacher should not be overenthusiastic in doing it for the pupils. When the apparatus is in his hands the experiences of the pupils are secondhand. He has to exhibit restraint. He is to give directions and offer guidance. Number of pupils should be invited to participate in the demonstration. He must arouse their powers of enquiry, train their observation and develop their scientific temper.

(c) *Data Processing* : For this purpose we select one exercise. It is suitable for the pupils of class IX. This involves finding of range of temperature and determination of the climatic type, whether continental or maritime. Mean monthly temperature of two stations is selected for this purpose.

TABLE I

Station	Name of the month—Temp in °C											
	J	F	M	A	M	J	J	A	S	O	N	D
A	1.1	5.6	8.9	16.1	21.7	26.7	29.4	28.3	25.0	18.9	10.6	5.6
B	22.3	23.3	21.1	17.8	14.4	12.2	11.1	12.2	13.9	16.7	19.4	21.7

The data may be studied as such. But for quick grasp of the climatic features of these stations it is desirable to represent the given data in the form of a line or a bar graph. The two diagrams should be made on the same scale, and placed side by side for analysis, observation and for arriving at conclusions. Station A : Which is the hottest month ?

July. What is the highest temperature ? 29.4°C . Which is the month with lowest temperature ? January. What is the mean temperature of this month ? 1.1°C . What is the difference between the mean temperature of July and that of January ? 28.3°C . So 28.3°C is the annual range of temperature at station A.

At station A winter months are Dec-Feb and summer season lasts from June to August. This is almost identical with the conditions obtainable in our part of the world. So station A must be located in the northern hemisphere. Further, its mean annual temperature is 16.7° . It has a warm type of climate,

Station B —: Which month has the highest temperature ? February. How much is the mean temperature of this month ? 23.3°C . Which month has the lowest mean temperature ? July. What is the temperature in July ? 11.1°C . What is the annual range of temperature ? 12.2°C

Don't we observe something unusual, by our standards, in this data. When is it summer at station B ? December to February. The months when we have winter here. So the station B must be located in the other hemisphere—the southern. What is the annual mean temperature at Station B ? It is 17.2°C . Let us summarise our findings.

TABLE II

Station	Mean Annual Temp.	Annual Range of Temp.	Summer Season	Winter Season.
A	16.7°C	28.3°C .	June to Aug.	Dec. to Feb
B	17.2°C	12.2°C .	Dec. to Feb	June to Aug.

Mean annual temperature indicates that both the stations have a warm temperate climate. The large range of temperature (28.3°C) at station A speaks of continentality. Whereas the low annual range (12.2°C .) at station B indicates maritime influence. The study of the seasons shows that station A is located in the northern and station B in the southern hemisphere. Analysis of the data reveals that station A has a warm temperate continental type of climate. The climate of station B is warm temperate oceanic type.

To conclude, a geography teacher should try to illustrate, explain or verify geographical concepts, pertaining to physical geography, by simple demonstrations, making models, drawing diagrams and analysing

data so that pupil's faith in realism in geography is strengthened and he studies the subject with a critical and scientific attitude of mind.

V

PROJECT METHOD

Traditional system of education is characterised by such features as the authoritarian attitude of the teacher, instruction that is bookish and unrelated to life and passivity on the part of the pupils. Here the students, as obedient masses, are spoon fed with facts and information. The children grow with attitudes not congenial to their social life. With change in the form of government from autocracy to democracy need has been felt to introduce democracy as a way of life. School, among other institutions, has been found an ideal setting for this purpose. The school has been envisaged as an environment where children choose a project or a problem, 'a piece of real life', plan and execute its solution. They work together, in close cooperation with one another, as members of a social group. In such circumstances the teacher ceases to teach and instead, acts as a guide. The school becomes a place where children are prepared to act their role not as future citizens but where they work and cooperate as citizens of today. This change in the educational thinking has been initiated in U. S. A. by John Dewey, the great American philosopher. His ideas inspired a host of American educationists who came forward with different methods of teaching based on these principles.

In 1918, Dr. W. H. Kilpatric of Columbia University presented his view point regarding a project and the procedure adopted in Project Method.

Definition

The word project is used frequently in the fields of engineering, irrigation, technology, science and in common usage. It is essential, therefore, to know what is meant by a project in the field of education. Once the definition of term is clear we can easily follow the method. According to W. H. Kilpatric, "*a project is a wholehearted purposeful activity proceeding in a social environment, or more briefly, in the unit element of such activity, the hearty purposeful act*". Kilpatric insisted on an activity in which pupil involvement is essential. It has a purpose

and the pupils conscious of this purpose participate wholeheartedly in it. He lays emphasis on social environment by which he meant working as a community with a common goal. He contemplates democracy at work in a school. Democratic procedures and processes are at work in an activity called project.

This definition has been cause of much bewilderment and confusion. Since Kilpatric's time many more definitions have been put forth. J.A. Stevenson states that "*a project is a problematic act carried to completion in its natural setting*". The other educationists who defined the project were Ballard, Burton and Charters. But no definition can be called perfect and clear. An attempt has been made to combine the two definitions, given above, together by Bining and Bining. They present the common-sense point of view of a project as "*a pupil-planned, purposeful task accomplished in a real-life situation*".

Pupils

This method of teaching, democratic and communal in essence, is best suited for adolescents of 12 to 15 years age. It lays stress on pupil planning. They should be mature enough to share responsibilities. One of the purposes of education is that children develop knowledge and understanding. They are also required to develop such attributes as are inherent in group planning. Working together as a group is another aim of education which is of no less significance. Here they are made to develop sense of responsibility because responsibilities are placed upon them. In the school community they work for a Common goal. This desirable trait is much desired by the educationists of today. Such a method gives pupils opportunities to put into practice their spontaneous and inventive faculties. For children a project is a piece of investigation leading to a climax.

Teacher

The very basis of this method is the planning and completion of a project by pupils. No direct help is forthcoming from the teacher. But his role has been likened to an unseen prompter in a play. If pupils fail to choose a project the teacher may suggest it. But the pupils must accept it and own it before it can be called a project. A good teacher sets before them worth-while tasks and it is the pupils who select one and own it. The role of a teacher does not stop here. His

guidance is not required at the planning stage only. It is necessary at all stages. He has to direct the pupil's activities and see that the project undertaken is accomplished within the stipulated time. The teacher has to keep himself in the background, as far as possible. He should come forward with an idea or a suggestion when asked by the group. He has not to share any responsibility which ordinarily can be shouldered by the pupils.

Geography

Geography, in comparison to other social sciences, lends itself well to project method. On account of the concrete nature of the subject and its emphasis on the study of reality it affords numerous themes which can be taken up as projects. "Team work, which arouses interest and emulation, is particularly recommendable in the collection of documentation on a given subject or the writing of monographs." [UNESCO-VIII]. Projects in geography have been taken up for the study of states of a country, countries of the world and natural regions.

A project takes up lot of time for its completion. Study of one state or a country may require a month or more. Being slow method we cannot complete the courses of study of any particular class within the academic year. It is desirable to take up one project in one session and cover the remaining syllabus by other methods.

PROCEDURE

The three steps involved in the project method are given below:

(i) "Set" Or Choice Of a Project

The project taken up by the class is to be decided upon by the pupils. The teacher is not to enforce his will. He is only to stimulate them. He may suggest a number of choices bearing in mind the felt need of the class and the syllabus, and also taste and temperament of the pupils in the class. His role ends there and then. It is the class that has to pick up an idea and work on it. They also sit together to plan for it. Suggestions are received from all pupils and a plan of work is agreed upon. So after providing a situation the pupils have to do the choosing or purposing. The purpose of the project, as far as possible must be acceptable to all. They must feel that it is their own project. Planning follows the choice of the project. Planning involves consider-

tion of the availability of resources, time and nature of the project. Planning involves a good deal of discussion. It is here that pupils offer themselves for sharing the responsibilities involved in the successful completion of the project. The plan arrived at is to be noted down and a sort of blue-print prepared. Kilpatrick calls this step of the project as the "set". The pupils are set for the task to be accomplished by them.

(ii) Presentation Act

This step is involved with getting them going. Here, with the plan before them, they set to work. The tasks have been divided and shared by the pupils. While working on the project they keep on learning. During the execution of the plan children partake in a variety of activities both physical and mental in nature. They collect information from varied sources like books, encyclopedias, magazines, journals, newspapers, brochures etc. They may also have to visit a museum, meteorological observatory, markets, farms, factories and the like to seek information and collect data. They may have to write to government or private agencies, to embassies and high commissions, located far away from the school area. This is the busy period with pupils and time consuming too. Whatever material or information is collected and received is recorded. Charts, maps, diagrams and models are prepared. This is the step in which pupils are actively learning while performing their jobs.

(iii) Completion of the Project

In the project method the problematic act or the purposeful activity is to be accomplished or carried to completion. A day is set for piecing together the activities carried out by different groups. It is judged and reviewed for its shortcomings and inadequacies by the class. They evaluate and criticise their findings. The entire activity is integrated and presented in a systematic order. The brochures, booklets, models, charts, maps and other materials prepared by the pupils are displayed suitably. To the exhibition are invited the pupils of other classes and the teachers of the school. This opportunity is utilised to invite the members of the community including the parents of the pupils and the administrators and supervisors of education.

VI

REGIONAL METHOD

Regional geography is one of two principal methods of geographical study; the other being systematic geography. Through regional geography we accomplish the basic objective of geography ; the areal differentiation of the earth. It helps us to understand the differences that exist between one part of the world and the other. Regional geography is the complement of systematic geography. The two terms can be made clear with the help of an analogy. In human anatomy all facts and relationships are studied in terms of categories viz. bones, muscles, blood system, nervous system etc. This is called systematic study. At the same time it is necessary to study the anatomy of hand or foot, arm or leg. Here we study the bones, muscles, blood vessels, nerves etc. present in the hand. Here all these facts have combined together to give the hand a distinct shape and function. Such a study is called topographic. In geography we call it regional study. In geography the study of the distribution of one element on a world scale is the field of systematic geography. On the other hand we find that several elements interact with one another at one particular place and give it a distinct individuality or personality. This is the sphere of regional geography. This is corroborated by the fact that in the real world the three components of our environment—physical biotic and social—do not exist and operate separately. But interact with one another to give rise to total environment. Systematic geography is more akin to systematic sciences while regional geography is chorological in approach. The former is characterised by analysis and the latter by synthesis.

Development

Regional geography in its present form is of recent development. However, in its simple form it can be traced in the works of Bernard Varenus, a German geographer of seventeenth century. He made a clear distinction between general (or world) geography and special (or regional) geography. Regional approach on modern lines was initiated, by Paul Vidal de la Blache, in France in 1903 with the publication of regional monographs of his country under the title *Tableaux de la.....* Alfred Hettner also adopted a similar approach in Germany. Vidal's work became a model for a number of his students in France. The

value of such regional monographs was realized by Mackinder and Herbertson in England. Mackinder discussed the significance of this method in his book, *Britain and the British Seas*, in 1902. Mackinder, in this respect, precedes Vidal.

A. J. Herbertson, working with his students at Oxford, was a pioneer in dividing world into smaller and manageable units for the purpose of accurate description. In 1905 he divided the world into major natural regions on the basis of climate. These were further subdivided on the basis of vegetation and relief.

Herbertson and Vidal worked on different principles. Vidal demonstrated the distinctive character of regions on the basis of both physical and human criteria, while Herbertson made physical elements of the environment as his basis. Herbertson divided the world into major regions while Vidal described and explained the regions of France. Both these methods laid the foundation of modern regional geography. "To Vidal man makes adjustments to the physical conditions in which he finds himself and he in turn, by his actions, makes an impact on the environment, modifying it in many ways, even in the course of time being able to change it entirely in some aspect or other. Thus man and environment are really inseparable and the interaction of the two produces differential effects from one area to another. Moreover, significant part of man's environment is man himself—man in society—or the social environment. This in essence is how Vidal perceived the man-land relationship. It provided him with a basis for investigation of individual parts of the world as distinct from treating the earth as a whole." [Edwards].

Region—Definition and Kinds

The word 'region' is used too frequently and so loosely that it is difficult to agree to a single definition or meaning of this term. In popular usage we identify a 'region' with an area which has particular characteristics. Whittlesey defines a region as 'an area which has been shown to be distinctive in some way or other, this depending on the kind of problem set'. James, has defined a region as "an area of any size, homogenous in terms of specific criteria, and distinguished from bordering areas by a particular kind of association of areally related features and therefore possessing some kind of internal cohesion". To

Hartshorne, "A region is an area of specific location which is in some way distinctive from other areas and which extends as far as the distinction extends". As a region is basically a form of generalisation it is natural that a region is a portion of earth's surface which possesses a high degree of uniformity with regard to those attributes which serve to distinguish it from other areas. The two main types of region are—generic and specific. Generic or formal regions are associated with systematic branches of geography. These represent the spatial expression of the physical, biotic or social aspect of environment. Examples of such regions are climate regions, land use regions, linguistic regions, and the like. Here the world is divided into types on the basis of any one element-complex.

The division of the world into specific regions is not an easy task. It has been taxing geographers to the extent that it is felt that specific region is difficult to define and delimit as geography is not an exact science. Here no two persons agree on the criteria selected for classification. The problem is complex and involves finding of acceptable basis for this form of region and of devising the right technique for delimiting it. Through this method we have to portray, the overall nature of a region or what we call, its personality.

Another type of region now in current use is the functional region. It needs to be distinguished from the formal region. As the man is progressively achieving mastery over his physical environment the emphasis is to be laid mostly on human activities. In the formal region we begin with the physical elements of the environment and then gradually proceed to the description of human activities. The impression conveyed is that the physical environment is all powerful and determines the whole course of man's activities. Such an approach smells of environmental determinism. But the functional region is a dynamic concept. Here the physical aspects do not necessarily receive first attention. It can be population, land-use, agriculture or any other human activity. "In short, a useful rule of thumb is first things first—the 'first things' being those significant to areal differentiation and geographic personality". [Fox 1966]

Topics like Nigeria and Ghana, Land of Palm Oil and Cocoa; Malaysia and Indonesia, Land of Plantations; in class VI

and Brazil , Land of Coffee Plantations ; Argentina , Land of wheat and cattle in class VII are some examples of functional regions taken up for study in NCERT geography textbooks. The Major Natural Regions of the world given in the geography textbook for class IX 'Man and Environment' are examples of formal regions.

PROCEDURE

In the previous pages an attempt has been made to present the significance of regional geography as a method of study of geography. Regional geography is an essential feature of modern geography. Study of the geography of the world or a country on the basis of its regions is considered as a novel and rational approach in the advanced countries of the world. "Every place, every tract of land no matter how small has a character all its own—a character compounded of totality of features existing together as far as these can be assessed—and it is this premise that is the essence of regional geography" [Fox]. The teacher of geography should show his pupils how diverse factors in operation in a region interact in order to understand the "terrestrial whole" and "unity in diversity". In each natural region of the earth's surface the physical and human conditions are uniform to allow the area to be considered as a unit. It is based on the method of geographic synthesis.

An outstanding feature of the modern geography syllabus in the school is the due weightage given to the study of regional geography. The regions selected for study are both formal and functional. These are spread throughout the course.

Through regional method pupils are to appreciate the interrelationship and interrelatedness of all phenomena, present at one place, which endow it with a quality all its own. "Appreciation of a place is the touchstone of geography and regional geography is the acme of that appreciation since it alone is concerned with the totality which does indeed exist". Pupils make an indepth study of the region, pick up all the salient features of the geography of that region and then endeavour to understand how individual features interact with one another to impart this area a certain distinctive character. In this way a deeper and clear understanding of the geographical environment is obtained.

Certain factors have to be considered for the success of this method. Firstly, the regional description must be accurate and precise

It must also include the interpretation of the phenomena that have combined together to give the region a peculiar character.

The second is the ability to use and interpret the map. For this purpose he may use a sketch map but the essential tool here is the topographical map. The map needs to be interpreted. Map interpretation should form an integral part of teaching regional geography in schools.

The size and the limits of a region should not dampen our efforts of getting an insight into it. The region is dynamic, not static, in nature and its size and boundaries keep on changing.

Finally the regional description should be lucid and concise so that pupils are drawn to it. They will read these for the insight and the pleasure they give.

This method is most scientific because it is systematic, orderly and logical.

VII

TEXT BOOK METHOD

In most of the methods used in the teaching of geography textbook is used as the basis of study. In the secondary schools of our country only one textbook is prescribed for each subject. It is prepared and published by the State Board of School Education. The availability of a single text book for a particular subject leads to the cultivation of reverence, on the part of the pupils, for that textbook. Whatever is contained in the textbook, whether right or wrong, is gospel truth for the pupils. They accept it unhesitatingly and willingly. This undue importance given to the textbook by the pupils is attributed to bad teaching. Where a teacher strictly follows and depends upon the book such an attitude is bound to develop. On the other hand, if a teacher corrects the factual errors in it, presents additional information and updates it by incorporating latest statistical data he is likely to impress upon the pupils that it is the teacher not the textbook that is the authority on geography. Such a teacher enriches the day to day class teaching by the information and news about topics of geographical interest, of the contemporary world, from journals and newspapers. He does not follow, strictly and slavishly, the chapter sequence given in the textbook. He changes it to suit his particular needs. He also supplements the contents of the textbook by the lecture or telling method.

Procedure

Several procedures are in use in the textbook method. None of these is without an inherent defect which needs to be considered before adopting it.

(i) *Earliest* : In this procedure emphasis is on the parrot-like memorisation of the subject-matter given in a textbook. Pupils are asked to memorise paragraphs or even pages, word for word, and reproduce these either orally or in the written form on exercise books or examination answer books. Best pupils are those who are good crammers. Such a procedure reinforces *Verbalism*, a malady which has been discussed in Observation Method. This procedure stands condemned and criticised for its close association with the memoriter system.

(ii) *Improved* : One of the improvements suggested, in the earliest textbook procedure, is that instead of word for word reproduction of the original text the pupils are required to give the gist or summary of the subject-matter in their own words. This was necessary because not all pupils were good at cramming. In this procedure the teacher assigns a certain portion of the textbook to the class for learning facts, principles or conclusions given therein. On the following day the pupils in the class are examined orally in order to ascertain that they are in a position to present the summary of the assigned portion of the textbook in their own words. But this procedure, though decidedly an improvement on the earlier procedure of repeating exact words of the textbook in a parrot-like fashion, suffers a number of drawbacks. In the first instance in classes with large number of pupils, as we have today, it is not possible to examine the entire class and cover the entire portion of the text material set for study. The two possibilities are either we ask all pupils few questions or few pupils all questions. In either case we do justice neither with the class nor with the subject-matter. In addition, the reproduction of the memorised facts does not guarantee their understanding. It is the understanding that is of paramount importance in the learning of real good geography. Knowledge too has a role to play in the development of reasoning power and judgement. But here knowledge and facts become ends in themselves when these are expected to be the means for developing such mental faculties as thinking, understanding and reasoning.

(iii) *Joint-Study* : The third procedure is that of pupil-teacher textbook study. Here the textbook is studied, loudly or silently, both by the

teacher as well as the pupils. The teacher explains the main points of the lesson including the terms, phenomena and facts given in the text. He substantiates the subject-matter of the book by relevant information collected from different sources. The teacher asks pupils questions in order to know whether they understand the subject matter. Even the pupils ask questions, seek clarifications where they fail to understand a thing. Such a procedure if adopted in the middle classes helps pupils learn how to use a textbook correctly and paves way for good and efficient habits of study. In the higher classes this habit helps in the adoption of methods of teaching like supervised study. In this method the stress is on the guided but independent study of the reading material by the pupils.

This procedure is of universal use in the schools of our country where it has degenerated into what we call, "*Stand And Read Method*". The pupil reads aloud from his textbook and the teacher occasionally makes a comment here and there.

(iv) *Assignment* : In this procedure the teacher divides the lesson into several topics. What a pupil is expected to learn about a given topic is furnished to him through an assignment specially prepared by the teacher. He is guided in the study of the textbook through the written assignment. He treads a well-defined path charted for him by the teacher. But the pupils while preparing their topics on the set lines come forward with a set of almost identical answers. If one of them is asked to read his answer, he is simply repeating what others already know.

REFERENCES

1. Anderson, G. Lester, 1974. *Nature and Methods of Educational Psychology* in *Educational Psychology* edited by Charles Skinner (Prentice/Hall) 4
2. Bining, Arthur C. & Bining David H. 1952. *Teaching the Social Studies in Secondary Schools* (Mc Graw Hill) 46-60.
3. Ibid 195-198, 235, 85.
4. Briault, E.W.H and Shave, D.W. 1960. *Geography In and Out of school* (George G. Harrap)

5. Brubacher, John S. 1981. *Modern Philosophies of Education* (Tata Mc Graw Hill) 221-273
 6. Debenham, Frank, 1957. *The Use of Geogroghy* (English Universities Press) 11-17
 7. Dewy, John 1976. *Democracy and Education*. (The Macmillan Company) 15
 8. Edwards K.C. 1970. *Regional Geography in Geography* edited by W.G.V, Balchin (Routledge and Kegan Paul) 99-114
 9. Fox, J.w. 1966. *On Regions and Regional Geography*, Readings in Geographical Education, edited by D.S. Biddel (Whitcombe and Toms) 77-84
 10. Jones, P.E. 1954. *American Geography, Inventory and Prospect*, editor with C.F. Jones (Syracuse) 9
 11. Hartshorne, Richard, 1946. *The Nature of Geography* (Associat-ion of American Geographers) Chapters, 9, 10
-

3

ORGANISATIONAL ACTIVITIES

Geography teaching in schools demands organisation of number of activities like excursion, geography room cum laboratory and geography museum. In this chapter we shall be concerned with the discussion of underlying principles, characteristics, equipment and values of these activities.

EXCURSIONS

The older theory of education was largely mental in nature and concern. The mind was supposed to grow through exercise and consequently the theory of mental discipline with its emphasis upon mental wrestling developed and held its sway for a long time. Today education aims at the all-round development of the personality of the child. It recognises that a child must be educated mentally, physically, socially, spiritually and vocationally. A modern secondary school is, hence, an educational setting in which boys and girls live, really live.

For an all round development of a school going child three elements are absolutely essential ; knowledge, ideals and habits. Knowledge is basic to all learning and living. It has been considered synonymous with education but knowledge is useless if it is not put to advantage. The second essential is a set of appropriate ideals. These not only supply the motivation but also determine the standards of achievement. Habits come next. What the individual does is certainly as important as what he knows. What an individual has acquired during his stay in school should be put into practice and these together will lead to the harmonious development of his personality. Consequently, in addition to

class room teaching, a school has to provide the child with opportunities in the form of sports, games, excursions, tours, debates, societies, clubs etc, where this aim can be achieved. In the following pages an attempt shall be made to indicate how excursions, besides enriching class room teaching, can pave way for the accomplishment of above mentioned aim. [Kaul-1965]

Psychological Basis

With the shift in emphasis from 'Latin to John' it is essential to know what the interests, tendencies, drives, urges and characteristics of a child are. It is the proper satisfaction and sublimation of these which leads to the all round development of the child. One of these urges is curiosity. Centuries ago Plato said, "Curiosity is mother of all knowledge". Sustained and well-guided curiosity is one of the richest veins which the teacher can discover and develop. One very important function of education is to discover, stimulate, develop and widen curiosities. Excursions offer opportunities for the student to develop these to his own immediate and ultimate satisfaction and profit. The second is the migratory urge. Apparently, all animals including men feel at times a dissatisfaction with their environment and a consequent craving for new surroundings and experiences and as a result migrate or run away. In any case the desire is strong, particularly, at adolescence. School excursions and trips provide ideal opportunities for its satisfaction because the settings are real and experiences are vital. Gregariousness comes next. Children demand opportunities when they can form a crowd and excursions are there to provide a stage. The other characteristics include assertion and construction. These, too, can be satisfied and taken advantage of in the outdoor school activities like excursions.

Philosophical Basis

Excursions and excursion method is a tool recommended by the Naturalists who, we may note, lay stress on the direct experience of the things. The philosophy of realism supports this trend towards real activities rather than verbal studies. Excursion method was used both by Aristotle and Socrates and it was recommended by Comenius. In the education of *Emile* it was employed as the chief technique by Rousseau while Pestalozzi promoted it in his famous school at Yverdon.

Experience forms the core of John Dewy's philosophy. He believes that there is an indisputable relation between experiences and true education. For him the only reality is one's experience of objects, physical and social surroundings around him. He lays emphasis on experiences which are socialised. Excursions go a long way in providing a child opportunities for his direct experience of the social life.

Utility

One of the main functions of the school is to develop good citizens. Being good citizens implies intelligent interest in and responsible membership of a community. This membership must be based upon an acquaintance with the affairs, feelings, history and ambitions of the community as reflected in its industrial, social, commercial, recreational and educational life. The student may acquire some of this knowledge through his regular curricular work, newspapers, magazines etc. but it is usually relatively uninteresting because it is second-hand. A more vital contact between the prospective citizen and his community and state may be made through the school excursions.

We are proud of the vast cultural heritage of our country the show pieces of which are scattered all over its length and breadth. The centres of religious interest are situated in open plains, on the sea coast or in the innermost and seemingly inaccessible recesses of the Himalaya. Every river in India has its own significance and so has every hill or mountain. About Ganges our late beloved Nehru has said in his *Will*, "... .. The Ganga is the river of India, beloved of her people round which are inter-twined her racial memories, her hopes and fears, her songs of triumph, her victories and her defeats. She has been a symbol of India's age long culture and civilisation, ever changing ever flowing and yet ever the same Ganga... .. the Ganga has been to me a symbol and memory of the past of India, running into the present and flowing on to the great ocean of future".

The future citizens are to be kept abreast of the economic development of the country. The impact of six five year plans and the achievements in this regard at the local and the national level cannot escape our eyes. There is hardly a state where we do not come across a multipurpose project, a dam, a hydro-electric or thermal project,

an industrial undertaking or the like, built in the post independence era. Late Pt. Nehru had rightly called the multipurpose projects as 'Temples of Modern India' and it is obligatory on the part of every individual to visit them and observe and assess the achievements in the fields of science, engineering and technology. Visits to industrial concerns, hydro-electric projects, mining centres, steel plants, refineries, textile factories etc. are apt to foster a feeling about their future responsibilities and duties. India, it shall be felt, does not need white collared gentlemen to work as clerks but efficient and industrious engineers, technicians, industrial workers to man these projects. These further apprise the children of the latest developments in industry, agriculture and commerce and the targets achieved or yet to be achieved in order to be in line with the great powers of the world. He sees for himself that his country is on its way to progress and prosperity so that in the near future he can have his head high in the family of nations. This in turn will promote a sense of love and reverence for the country. Seeds of national feeling and pride nurtured here.

School excursions have a recreational value too. The child sooner or later gets tired of the daily dose of chalk and talk in the class. The daily routine which he has to follow within the school premises makes his life monotonous. In the crowded schools of our country where the provision of adequate accommodation is still an unsolved problem, the individual feels his personality cramped. Participation in the excursions takes him away into the open where he can, at least, take a normal share of fresh air which is ordinarily denied to him in his class room. Change, it is said, is the law of nature and it is the change which gives him relief from boredom and drudgery.

The social aspect of school excursions cannot be lost sight of. Valuable lessons in practical cooperation and habit of team work are learned when the group is on an excursion. The training in give and take makes one to realise the relation of the individual to the society and society to the individual and gives opportunities for the exercise and development of '*esprit de corps*'. Opportunities are there for the display of leadership, initiative and obedience. In the social contacts provided by these activities his corners are rounded off and social kinks removed. As the interests and abilities vary from individual to individual, excursions provide a *via media* for the display of such abilities and

tendencies which otherwise pass unnoticed in the class room where the worth of an individual is judged mostly by his attainments in the examinations.

The last, but not the least, value of school excursions is the enrichment and supplementation of the curricular experiences. To the average student most of our school subjects lack vitality. They are book bound, formal and academic. Bookish descriptions of the wonders of some phenomena, processes and features are uninteresting because they are more or less remote from reality consequently difficult to understand. They become more meaningful and interesting when supplemented by actual first-hand experiences with these items in their functional relationships and settings.

Excursions put life into the class room geography. The concept of geography as the study of interaction between man and his environment or the study of the areal differentiation of the earth, can be brought home to the class only when observations are made in the open. Geography surpasses other subjects in the school curriculum so far as the excursion as an aid to class room teaching is concerned.

Characteristics

Excursions, walks by the class, outdoor classes and field work must be considered as among the keys to geography teaching by active methods. Nature is the geographer's laboratory Prof. Frank Debenham cites an example of the methods adopted by three persons when asked to write a monograph on elephants. One person goes to the library and collects the relevant published material on elephants, sits in his room and attempts the monograph. The second visits the local zoo for two months, observes the elephants carefully and writes the monograph. Third man picks up a gun, boards an aeroplane reaches Kenya and roams through the forests of East Africa and studies the elephants in their habitat. The three methods in geography, are called armchair research, observation and field work respectively. All the three methods are essential. The field work must come first of all. Friedrich Ratzel, a German geographer, when asked about his approach to geography replied, "I travelled, I sketched and I described". During field work we study individual places first-hand. This helps us to understand places studied second-

hand in books and maps. Such a procedure leads to the formation of a complex web of concepts which, finally, gives us insight into place in general. Geography is called the philosophy of place. We understand place by studying continents, countries, states, regions or in short places. The relationship between the two has been established by Alice Coleman in these words, "Field work is the geographers planned opportunity to experience the raw materials of his subject. His subject is 'place' and his raw material 'places' ". Geography in addition to description of the earth has to perform number of functions. But all this can be achieved when we visit places and study them first-hand. Briault and Shave remark, "Geography describes the earth. It may do more ; analyse, synthesise, interpret, observe correlations and evaluate causal relationships ; but first it depends on going and looking". During his school days a pupil is made to observe the natural and cultural features of his environment. He is taken out of his classroom into the field. By repeated exercises of this kind his eyes get trained and he reads the signs and the symbols in the form of hills, valleys mountains and meanders. All these have a meaning for him. He enjoys his trips and tours in later day life, whenever he gets an opportunity for the same. "A knowledge of geography, writes Zoe A. Thrals, "vitalizes travel. The traveller should have the "seeing eye", the eye that can read the landscape".

When a child comes to school for the first time it is not only the school and the village that he sees. Does he not, see the sky, the sun, the moon and the stars ? Does he not, also, see the clouds, the storm, the rain, the hills, the mountains, the plains, the plateaux, the trees, the shrubs ? All these constitute real geography. In order to learn it the child has to move out of his immediate surroundings to see all these in great variety. This excursion, or outdoor activity or field work helps him in direct learning, gives him opportunities to satisfy his spirit of exploration, broadens his mental horizons to visualise distant handscapes, aids in the comprehension of the written descriptions given in geography books and also in learning the language of the maps and their interpretation. Pattison, in his famous statement of 1964, has given us four traditions of geography. These are : (i) the Spatial Tradition, (ii) the Area-Studies Tradition (iii) the Man-Land Tradition, and (iv) the Earth Science Tradition. Whichever tradition we may select and make an object of study we must bear in mind that field work forms its essential basis. We cannot conceive of a geographical course without

field work. It is an aid, an effective aid, both for teaching and learning geography.

Organisation

In the organisation and conduct of field work the geography teacher has to make detailed and careful preparations. He has to plan for it in such a meticulous manner that maximum outcomes are secured. The various steps involved in planning the field work or excursion include preparation on the part of the teacher, preparing the pupils, planning administrative details, conducting the excursion and evaluating the results.

(a) *Teacher Preparation*

First of all the teacher has to select a place of visit where the field work is to be carried out. In this connection he has to take into consideration the age and maturity of his class. So the places of visit vary from class to class. In primary classes it may be observation of a natural feature—rivers, streams, ponds, lakes, hills, valleys—present in the home region. For the study of cultural features visits may also be paid to small scale industrial units, handicraft centres, bus stands, railway stations, airfields, farms and gardens. In middle and high classes the pupils should be involved in actual landscape reading. Worthwhile field studies can be conducted by taking children to various parts of a town to observe industrial areas, to a mountainside to observe forests, drainage and soil erosion. In all cases the guiding principle should be to withhold unnecessary details so that the class is neither exhausted nor confused. When the area of field study has been selected the teacher's preparation consists of the following :—

(i) The teacher must study the available literature on the geography of that area so that he is in possession of its detailed knowledge.

(ii) A study of topographic sheets, revenue and other maps, is essential for knowing the area.

(iii) The teacher, after preparing a theoretical background of the area should personally visit the place days or weeks in advance. Such a field reconnaissance will help the teacher to know what features can interest the class.

(iv) During the field reconnaissance he will select a spot of vantage position from where the observations can be made. While at this spot he will also record the details of proposed observations. He will also select and chart the route to traverse the area for studying and collecting other details of field work.

(v) The most important job of the teacher is to secure copies of maps of the area, if available, for use by the group. Otherwise, he may have to prepare a sketch map himself and get it duplicated. It is only with the help of a relevant map that the success of field work can be ensured.

(vi) He has also to provide the pupils with guide sheets so that they know beforehand what physical and cultural features are to be observed by them. A number of questions and a brief explanation makes up a guide sheet.

(b) *Pupil Preparation*

Field work or an excursion should be the outcome of the felt need of the class. There are occasions during class work when the teacher and pupils feel that they are not clear about a topic. They feel the need of visiting a farm or a factory, a river or a hill to see the geographical facts for themselves. They take extra interest in those subjects and topics which are an outgrowth of their class work. During class discussion the specific purpose of the field work is set and plan prepared accordingly.

(i) For effective conduct of the trip it is desirable to divide the class into several groups. Each group will have its leader. The responsibilities should be divided among these groups so that they are clear about the duties to be discharged by them. During the class discussion it must be impressed upon the pupils that the field work is a privilege and that a certain amount of decent and courteous behaviour is expected of them be it with the bus driver, the factory manager or the village folk.

(ii) The class discussion must also make clear how the field work is to be conducted and evaluated. Their good suggestions should be incorporated in the planning of a field work.

(iii) Pupils, particularly of the upper classes, can render immense

assistance to the geography teacher in the preparation and duplication of background material like maps and guide sheets.

(iv) Pupils of high classes can study the literature available on the field study area. They should also try to establish a link between class room teaching programme and the subject matter of the field study.

(c) *Administration*

Arrangement of a field study involves number of problems. A planned organisation can help overcome these difficulties. Most of these problems are connected with administration.

(i) A teacher has to envisage problems that he might face during field work. These may be linked with transport, accomodation. meals, first aid etc. He has to make provisions to overcome these

(ii) For transport a hired bus is an ideal arrangement.

(iii) The visit to a factory, game reserve, museum, and other prohibited places requires permission of a manager or an owner. In this connection letters may be sent to concerned quarters well in time.

(iv) No teacher can afford to arrange a field work without the consent and cooperation of the school principal, headmaster or the administrator. He provides and sanctions funds to meet the expenditure involved in it. Field work of one class upsets the usual work schedule of the school. Administrator's prior approval for this activity is to be sought before planning for it. He may direct other teachers to lend you necessary equipment. Co-operation of other colleagues must also be sought.

(v) It is advisable to make provision in the school work schedule, at the beginning of every academic session, for excursion; the number and time including. One excursion in each season is desirable. Class excursions should be given preference over school excursions.

d) *Conduct of The Field Work*

In the planning step the pupils have been provided with background knowledge of the study area, divided into groups, assigned jobs, supplied maps, guide sheets and equipment. On the day of excursion they reach the selected spot in a bus or a boat. They deposite their belongings in the house or room booked for them. They pick up

relevant material carried by them for field work and set to work under teacher's guidance.

(i) For beginners, that is those pupils who have had little experience of field work, the observations should be directed by the teacher. He should train them to read the landscape.

(ii) The teacher should stress individual observation in case of those pupils who have acquired some experience of field work.

(iii) Those pupils who have developed the ability to observe are in a position to interpret their observations. The teacher should guide them to find an answer to the question ; why ?

(iv) The pupils, on their part, in the first instance, record the observed facts on a map, guide-sheet or note book. Recording of the facts always follows observation. He has to write answers to the questions given in the sheet. This on-the-spot recorded information will form the basis for discussion and interpretation.

(v) A variety of maps can be prepared in the field by the pupils. It can be a traverse map if it indicated the routes of the journeys undertaken. In a land-use map the fields under different crops can be shown. While observing crops, notice can be taken of the soil types. This will result in the preparation of a soil map. If the observation involves the study of relief simple sketches of landforms can be made. In a town functional zones can be observed and shown on a map. During a visit to a forested area, different types of vegetation can be presented on a map.

(vi) Children collect samples and specimens of a variety of objects. These can be of rocks, soils, vegetation etc. These will constitute their contribution for school museum.

(vii) Pupils may carry their cameras with them and take photographs of some prominent objects. A child with artistic taste and skill can paint a scene or a feature.

(viii) During their field work children may have to collect some information directly from the manager, owner, director, village headman and a patwari. They will show utmost courtesy while asking questions and record the statements with care.

(ix) With the equipment carried by them they may have to make certain measurements like the velocity, depth and width of a stream or

a canal, depth of water-table, height of a feature, thickness of a soil profile, temperature of water. Here the teacher should insist on accuracy and seriousness on the part of the pupils.

(e) *Evaluation of Field work*

Back in the school, the class shall have to spend some time for the follow-up work and evaluation of the field work. This will involve the interpretation of the data collected, preparation of visual representations, completion of maps and discussions. All the information collected in the field shall take the form of a report or a booklet. The observations and findings may be highlighted through an exhibition. The reports, maps, graphs, diagrams, sketches and specimens should be displayed prominently for some time so that other classes also know the nature and outcomes of the field work of this particular class.

While attempting a descriptive report of the study area and by appending illustrations to clarify certain features and facts the pupils come to understand the geography of that place. Long and Roberson remark, "Field work can be used to show pupils how geography gets into the textbook". They come to realise that what is written in their textbooks or what the teacher talks in the class is based on the field work and observations of other people.

TYPES W.K. Birrell suggests several types of field studies that can be carried out during the secondary school course.

(i) *Macro-area Reconnaissance*

Here the aim is to select a large area but the observations should be less detailed. This helps pupils to get an overall impression of the area. He observes the similarities and the differences in the major landscapes. This involves travelling long distances and several days absence from school. It can be taken up in IX or X class.

(ii) *Micro-area Study*

In this type of field study the area to be selected is small but a detailed study of the same is desired. Home region is an ideal site for such study. The area is to be visited time and again in order to get thoroughly and adequately familiarised with all aspects of its geography.

(iii) The Unit Field Study

Such a study involves the observation of a particular aspect of the geography course like the study of rocks, soil, vegetation or landforms. This is suitable for primary and middle classes.

(iv) Sample Area Field Study

From a major field of geography, like the urban, industrial agricultural, we select one topic or sample for observation and interpretation. Such a sample includes study of a town, cement factory, commercial vegetable farming, from these fields, respectively.

(v) Field Map Reading and Interpretation

Number of skills are involved in map making and a child must know these in order to read and interpret a map. A given map, say a topographical sheet, is studied in the field. It is properly oriented first, then the features on the map are identified with the features on the ground, the symbols and colours used in the map are recognised with the elements represented by them. By such repeated field exercises with different maps ability to read and interpret the maps is developed in pupils.

Conclusion

Excursion or field work is a vital feature of geography education at all stages including secondary schools. Well-selected and carefully conducted field work prepares a concrete base for geography teaching and learning in schools. It provides opportunities for the personal growth of the pupils, teacher notwithstanding. The discussion is concluded with these remarks of Birrell, "Field studies properly organised, planned and conducted bring new horizons to the teaching of geography in the secondary schools; they lead pupils to the understanding of geography as a real and a dynamic subject and give to pupils an understanding and appreciation of the world about them that is not possible to achieve in formal class room teaching."

II**GEOGRAPHY ROOM CUM LABORATORY**

Setting up of a geography room cum laboratory is yet another activity where organisational capacities of a teacher are utilised. Th

activity is entirely of different nature when compared to his routine duties of class teaching. First of all he has to plan for constructing a suitable accomodation, with a specific design and dimensions, or for remodelling the existing one. The next step is to provide it with furniture and fittings. The room cum laboratory then needs to be equipped with aids, tools and appliances. It is a long-term project which calls for careful planning and judicious execution. The task does not end with the establishment of a geography room. The tools and appliances, when used repeatedly, need to be replaced and the furniture and fittings repaired from time to time. The organisation of the geography room requires its maintenance also. Before we discuss what we should have in a geography room it is worthwhile to know why we should have it. What purpose is served by a geography room cum laboratory ?

Why A Geography room

Like other science subjects there too must be a special room for the teaching and learning of geography. A geography teacher has to use wall maps, globes, film strips, epidiascope and other audio-visual aids. It is not easy for him to carry these aids from one classroom to another. Geography students need adequate working space where they can draw their maps and diagrams, where apparatus, atlases and reference books are easily available for their use. A geography room cum laboratory serves number of functions.

(i) Learning Environment

A geography room with working facilities, visual displays and apparatus creates a psychological climate which surrounds the pupils. It sets a stage for the study of geography. The environment is not only conducive to effective and prompt learning on the part of the pupils but it facilitates good teaching also. In the words of Gopsill it is, "— a laboratory devoted to geographical pursuits where the young student is conditioned in a geographical atmosphere, where he finds everything he needs for his work ready to hand."

(ii) Sustains Interest

The apparatus and equipment, aids and tools needed by the pupils either for the comprehension of the textbook or for doing practical work are properly stored and readily available for their use without any let or hindrance. This helps to maintain the interest and enthusiasm of the

pupils. Some visual aids are displayed constantly in the geography room. Children consciously or otherwise keep on looking at these aid and assimilate useful information. When a young student feels like doing something and he is not in a position to pursue his work, his fervour gets killed. It is really difficult to rekindle the spark of work in him.

(iii) *Boosts Prestige*

By assigning a special room for the teaching of geography the subject receives recognition. Its prestige gets boosted. Pupils try to equate the status of those disciplines which have a separate room or a laboratory. Pupils take delight in conducting their friends from other schools into their geography room to show them what type of work they are doing and in what congenial environment.

(iv) *Unfinished Jobs*

It has been observed that pupils involved in practical work are not, on several occasions, in a position to complete the given exercise within the specified time. Geography room provides the safe space where the unfinished job is left undisturbed. As soon as he gets time he resumes his work and completes the job without, in any way, affecting the quality of work.

(v) *Geographical Tools*

Geography teaching demands the use of a variety of tools and aids and a wide range of equipment. These he will use most effectively when easily available to him. In addition, for using projected aids he needs electricity. The geography room is adequately provided with electric points wherefrom connections can be obtained. Some projected aids are costly and heavy and cannot be removed repeatedly. In geography room their position is fixed in a manner that these can be used from that very position. Such an arrangement prevents waste of time, avoids damage to costly apparatus and checks distraction. As the aids and tools are easily accessible to pupils, they handle and manipulate them as often as they like. Familiarity with the tools of geography helps in the formation of correct concepts. At the same time these facilities make them creative. They will often be seen in the laboratory doing something useful and satisfying.

(v) *Self Reliance*

Setting up of a geography room, or for that matter any school activity, is not an exclusive concern of the teacher. Wise teachers always involve their pupils in such activities. These young students co-operate with each other for its upkeep and maintenance. On most of the occasions they assist the teacher in the operation of projected aids or in the display of suitable maps or charts related to the lesson.

In the current events corner or on the bulletin board they fix maps, news paper cuttings, and other relevant printed material. For this they make their own collections. They feel committed to present the latest reporting of a current event or the latest happening in any part of the world. This develops self reliance in them.

(vi) *Correlation*

In a geography room a pupil comes across such meteorological instruments as Maximum and Minimum Thermometer, Dry and Wet Bulb Thermometer, Barometer and rock specimens like granite, basalt, coal and marble. He finds all these things in the science laboratory of his school. This gives him a feeling that there is much in common between one and the other subject area. The granite specimen that he had observed in the geography room is exactly like the piece of granite that he had seen in the science room. He infers that the 'science granite, is the same as the 'geography granite.' Correlation between two subjects becomes easy and he gets convinced that what he studies in the geography room is complemented by what he learns in the science laboratory.

Characteristics

A geography room cum laboratory has certain outstanding characteristics. It is a place where the equipment and aids are to be stored, where the pupils have to do their practical work, where they sit at their tables to attend to their lessons and demonstrations, and where the teacher comes to teach and guide. Geography room, therefore, serves as a class room and a laboratory ; it is used for storage and for teaching. It must have adequate seating and working facilities, ample chalk board space, sufficient display surface, good lighting, satisfactory electric

fittings, enough equipment, variety of aids, and adequate projection facilities.

LAYOUT

The recommended size of a standard geography room for a class of forty students is 87.0 sq. m. (12m × 7.25 m). But in view of the cost of construction and other difficulties the minimum size is a room of 65.25 sq. m. (9m × 7.25 m) floor area. Preferably the room must be in the first floor of the building opening on the south towards a balcony or a flat roof. If situated in ground floor it must have sufficient open space in its front. A southern aspect in the northern hemisphere, outside the tropics, is essential. The southern wall if fitted with french windows facilitates astronomical observations. Through the windows of the geography room pupils should get a panoramic view of the home region.

The walls on the north and west should be blind while the windows should be fitted in the other two walls. On the south side, in addition to the windows, there must be two doors—one for entry and the other for exit. All windows should open outwards.

Sufficient natural light must enter the geography room cum laboratory but care must be taken that not too much light floods it. It should not result in a glare. The windows are to be fitted with double curtains in order to convert it into a dark room so that projected aids are put to use satisfactorily. To avoid lack of ventilation on such occasions the ventilator should be fitted with an exhaust fan.

Source Book of Geography Teaching (UNESCO) divides the space available in the geography laboratory into four distinct areas: teaching area, class seated area, class working area and storage space. To this we add fittings and furniture, aids and equipment.

(a) Teaching Area

This comprises the front wall (the blind west wall) and a floor distance of about ten feet up to the front row of pupil's seats. The teaching area consists of the following:—

(i) Chalk Boards

A major portion of west wall is covered with a chalk board. It can be a cemented surface which is now, generally, painted olive

green. Such a chalk board is durable and does not undergo much wear and tear. The alternatives are to fit the wall with a roller board or folding board or the counterpoise sliding board or interchangeable boards. The underlying principle is to provide the teacher with maximum writing and drawing surface. A portion of the chalkboard should have two inch squares painted on it. This will serve as the graph for drawing diagrams on it.

(ii) *Map Display*

In the north western corner of the room, close to the chalk board, there should be a wooden rail or any map hanging device. This shall be used for displaying the particular wall map which the teacher requires for his lesson. The map display arrangement should be conveniently operated without any waste of time or an undue break in the lesson.

(iii) *Picture Display*

On the other side of the chalk board the wall surface should be covered by planks of soft wood which can take drawing pins. On this display board the teacher will fix pictures, photographs diagrams and other visual materials as may be required for the illustration and elaboration of the topic under study. If the teacher stands in front of the chalk board, facing the class, the map display apparatus lies to his left and the display board on his right. He can use a pointer for using both these aids without leaving his position.

(iv) *Screen*

On the front wall there is sufficient space available between ceiling and the chalk board and between chalk board and the floor. It is desirable to utilise every square inch of available wall surface. In the middle portion, above the chalk board, a simple roller screen may be suspended from the ceiling. It may be pulled down when required for use. This position of the screen does not disturb the seating arrangement in the class and is therefore given priority. In the absence of a roller screen this part of the wall surface must be painted white to serve as a screen.

(v) *Storage of Stencils*

A set of black board stencils or the outline maps of various countries and home states must always be available with the geography

teacher. These stencils, made of plywood or tin-plate, constitute an essential aid for chalk board drawings. The teacher also needs foot rules, compass, set squares and other geometrical instruments for making diagrams and plans. Both the stencils and the set of drawing instruments are stored in a specially constructed niche in the front wall below the chalk board.

(vi) *Teacher's Table*

A long stout table with a height of three feet and a flat top constitutes teacher's table. It is placed in front of the class parallel to the chalk board wall. This table is used for a variety of purposes by the teacher. He may demonstrate an experiment to illustrate a geographical phenomena or show them rock or other specimens. The top must be covered by some such material as cannot get scratched or stained.

To this table are fitted switches that control electric lights. The space below the table can be utilised for storing map-sheets, costly and delicate projected aids, stock registers, map inventories and the like. A raised dais between the table and the chalk board wall is helpful. The teacher stands on it at a commanding position. He has an eye on everybody and on everything in the geography room.

(vii) *Globes*

A geography room must have at least two globes. One should be a slate globe with continents and oceans shown on it. It can be used both by teacher and pupils for drawing geographical details with the help of chalk. The other should be a strong metallic globe with details printed on it. Its diameter should not be less than 30 cm. It should be suspended from the ceiling, by a pulley arrangement, within the teaching area. It can be pulled down when required for demonstration. A globe in such a position can help pupils imagine earth in space. Different topics of astronomical geography can be easily demonstrated. The globes, described above, are the minimum requirements. There can be more of them.

(b) *Class Seated Area*

This part of the geography room covers major portion of the available floor space. Here we must have seating arrangements of forty pupils. The most satisfactory arrangement is to provide a pair of pupils

with a flat-topped table measuring $1.25 \text{ m} \times .75 \text{ m}$. With each table are placed two armless chairs. Pupils must be comfortably seated during their lessons. The tables and chairs may be arranged in such a manner so as to permit free movement of the pupils. Ordinarily these are placed parallel to the teachers table so that entire class faces the teacher and the black board. The purpose of using a table with a groveless flat top is to facilitate children in spreading their map sheets, or atlases while attending to teacher's discourses. When pupils work and study in pairs it helps to develop mutual co-operation between them.

The purpose of keeping movable tables and chairs, as against fixed desks, is to re-arrange the seating plan as and when desired. To avoid noise chairs and tables should be fitted with rubber shoes.

(c) Working Area

The working space should be distinct and separate from class seated area. The ideal location is along the eastern and the southern wall of the geography room. Strong wooden tables, of window height, roughly 90 cm. high, fixed along these two walls provide the working space for practical and individual work of the pupils. As economy and full utilisation of the space has been our motto, all along, it is advisable to use the space below the tables for purposes of storage. The tables may be provided with tall stools for use by the pupils. The other items fitted in the working area are :—

(i) Sand Tray

It consists of a wooden or metallic tray $1.25 \text{ m} \times 1.00 \text{ m}$. with a depth of 20 cm. Dry and clean sand is placed in it. The tray may be placed on a table and if possible near a sink. The tray must be water tight. Wet sand can be used for making models of a number of physical features. This is a convenient and cheap device for model making.

(ii) Tracing Table

In geography room need is felt, quite often, to reproduce maps. Similarly rough sheets and maps, prepared during visual representation of statistical data need to be faired out. All these require a tracing device, which is convenient and less time consuming. Tracing table serves this purpose. No geography laboratory can be deemed complete without at least one tracing table. In order to effect economy of space

and cost a portion of the working table with a glass top be used for this purpose. Even a display cabinet with slight modifications can be used for tracing.

It consists of a table, about 1.5 m. high, with a box arrangement at the top. In the lid of the box is fixed a thick plate of ground glass. The depth of the box is about 20 cm. The floor and the sides of the box are painted white or covered with tin foil to provide reflective surface. On the floor are fixed several bulbs of 150 watts. A good alternative is to fit the box with fluorescent strip lighting. One side should be kept open or perforated so as to provide ventilation and keep down the temperature inside the box.

(iii) *Display Cabinet*

It consists of a series of drawers fitted within cabinets for displaying different kinds of specimens. The size of the cabinet should be 1.25 m × .75m. It is fitted on four sides by transparent glass sheets and its interior is illuminated by tube lights. The drawers must be interchangeable so that one particular drawer can be placed on top for purposes of display.

(iv) *Observation Site*

For astronomical observations it has been suggested that a vertical pole be fixed at some convenient spot in the school ground. These observations can also be carried out at some spot close to the south facing window of the geography room. Here the shadow of a vertical rod can be marked on the table top.

(d) *Fittings and Furniture*

The furniture and fittings of a geography room consist of a number of items. Some of these, like chalk board, teacher's table, pupil's class room tables, chairs, working tables and display cabinets have already been discussed in the preceding sections. The other items include display boards, film strip rack, filing cabinets, map cupboard and other storage cupboards, cabinets, chests or almirahs.

(i) *Display Board*

The entire length of the blank wall towards the north is to be covered in the middle with planks of soft wood. This will provide the largest display surface in the geography room. Maps, charts and diagrams can be fixed for continuous display on it. On it must be fixed

a large size relief map of the home region of the pupils. A section of this display surface towards the back wall is to be utilised as 'Current Events Corner'. Here the latest developments in the world, particularly of geographical interest, in the form of hand made sketches, news paper and magazine cuttings, brochures etc. may be fixed for study by the class.

(ii) *Notice And Display Panels*

Notices regarding the class activities or the programmes of the Geography Club are to be pasted on notice panels. Similarly, the excursion reports, maps and other collections are to be displayed for the examination and observation of other students. The notice and display panels may be fixed inside the geography room or outside it near one of the doors, where it can be seen by all. If these panels are provided with a glass front, these serve as display cases.

(iii) *Book Shelves*

Geography books will generally be stored in the school library. But there are some books or reports which have reference value. These are to be placed in the geography room. For this we need a book shelf with a glass front. Geography magazines and atlases are to be placed separately in a rack.

(iv) *Filing Cabinets*

News paper cuttings, pamphlets, answer books, question papers, pictures, magazine articles are to be filed properly and placed in a cabinet. These should be readily available for use without any wastage of time and effort.

(v) *Map Cupboards*

Maps, as unmounted sheets, can be stored in a large sized drawer. But wall maps, fitted with rollers, can be stored in various types of cupboards. These may be horizontal, vertical or mounted on spring rollers. The vertical wall map cupboard takes less space and can hold large number of maps of same size. The maps need to be protected against dust and damage for future use.

(vi) *Other Cupboards*

Ample storage space is needed for aids and equipment purchased for geography room. These include meteorological, survey and projection apparatus, drawing and stationery materials.

(e) Aids and Equipment

The list of aids and equipment used in a geography room cum laboratory is given in the following :—

(i) Chalkboards

In addition to the main chalkboard, $3.5\text{m} \times 1.25\text{m}$, fitted to the front wall there should be several spare black boards of small size. There should be a collection of roll up black boards also.

(ii) Maps

There should be a variety of maps available in a geography room. These may be physical and political maps of continents, countries, states, home country and of the home region. In addition there should be a good collection of thematic maps—physical, administrative, roads, railways, water ways, air ways, places of tourist interest, hydro-electric projects etc.—of the home region.

Some of these maps are to be stored in specially designed map cupboards, drawers or filing cabinets. A number of maps are to be displayed permanently. A map of the world and a map of India shall be included in this category. An excellent map for display, though expensive, is the raised relief map of the world. These three dimensional plastic maps of the continents are also available. These should be displayed permanently. Roll up maps with an outline of a continent, country or state are quite useful.

(iii) Globes

One slate globe and one printed political globe constitute the minimum requirements of a geography room. There may be a variety of other types of globes. A wire globe is quite useful for explaining longitude and time.

(iv) Models

Most of the models required in the school may be made by the geography teacher and his pupils with the help of sand tray. Some models can be made with the help of clay. Some models illustrating relief features, dams etc. may be purchased.

(v) Pictures

Pictures may be collected from magazines and calenders and mounted on chart paper. Some of these shall find their place on the display board while others need to be stored for future use when the relevant topic comes up for discussion.

(vi) *Atlases*

A set of school atlases should be handy because these are often used during class teaching. A uniform set makes explanation easy.

(vii) *Weather Observation Kit*

This is the most essential equipment in a geography room. It consists of a Maximum Minimum Thermometer, Rain Gauge, Wind Vane, Wet and Dry Bulb Thermometer and Barometer.

(viii) *Audio-Visual Equipment*

This will include a transistor and a T.V. set so that children in the class can listen or view a geography lesson when the same is broadcast or telecast during educational programmes.

(ix) *Projection Equipment*

The geography teacher has to project still pictures, slides, film strips or sound motion pictures during his day to day class teaching. For this purpose we need a 5 cm×5cm slide cum film strip projector, epidiascope and 16 mm projector. All these are to be set on a portable trolley. The shelves provided in the trolley can be used for storing film strips and slides. Purchase of projected aids involves lot of expenditure. There must be a good collection of slides, film strips and geography films as well.

(x) *Survey Equipment*

An engineer's chain, a measuring tape, arrows, ranging rods, and a compass constitute survey equipment.

(f) *Storage*

The cupboards, filing cabinets, book shelves, racks, display cabinets, drawers, etc. discussed under furniture and fittings are used for storing the aids and equipment listed in the preceding section. It is the proper storage of the aids and equipment that can preserve them for subsequent use. All items should be labelled and a card index prepared so that the aims set for establishing a geography room are achieved.

A well equipped geography room cum laboratory can be of immense help in teaching and learning geography.

III

GEOGRAPHY MUSEUM

The term museum has its origin in a Greek word *mouseion*, meaning the *temple of Muses* or simply the place of study. It is synonymous with the word "university". The word 'museum' got well established in the English language by the middle of eighteenth century. It stood for any building or apartment which was set apart for study, for service as a library or repository of collections. The basic function of a modern museum is research or increase of knowledge but all good museums, also, help in the diffusion of knowledge. So one of the chief aims of a museum, as a public institution, is to educate people. Today it stands for an educational institution. It does this with exhibits, guide service, lectures, radio talks and publications. For a museum the objects are carefully selected, skilfully labelled and exhibited judiciously so that they tell a story.

School Museum

Fortunes have been spent in establishing some famous museums of the world. Millions of rupees are spent on maintaining them. In a school where grants are not available even for the much needed geography aids and equipment how can we expect that a huge sum of money shall be spent on establishing a geography museum. A school geography museum is a humble effort on the part of the teacher to collect, arrange and display objects of geographical interest. He organises the activity in a manner that the pupils make a substantial contribution by way of their collections. The accomodation and display equipment is to be provided by the school.

Values

The fundamental value of a geography museum in a school is educative. It is to increase knowledge and to diffuse it. The topics in geography are so plentiful that numerous observations are required to get a true perspective of the subject. Some of these experiences are carried out outside the school during excursions or field work. But most of these observations are to be conducted within the school. Geography room with aids and equipment forms an ideal place for such experiencing. In addition to it, we need a place that houses

collections and specimens, where more observation work can be taken up. It is the geography museum.

Since the museum is set up by the joint efforts of the teacher and the taught, it has a social value. Children vie with each other to make maximum contribution. The collections are to be labelled properly. The label bears the collectors name. Boys and girls should get the impression that setting up of a museum is a corporate responsibility of the geography students. They feel involved and work together for a common goal. Through such activities items related to agricultural, pastoral, and manufacturing industries and other fields of civilisation, in which the child lives, shall be brought into the museum. It thus has a cultural value too.

Characteristics

The chief characteristics of a school geography museum is system and order. The objects collected need to be classified and then arranged in a manner so that the exhibits captivate the interest of the child and educate him. The museum space may be divided into several segments. Each segment should deal with only one particular theme of geography.

In the absence of regular grants set aside for the purchase of exhibits and a full time paid curator to look after its maintenance it is the duty of the geography teacher to press into service all the talent available with him. The pupils are to be motivated to collect the right materials for the museum. They are to be made responsible for arranging the collected articles in their proper sections. From time to time he will apprise his pupils of deficiencies and gaps in the collections.

Several plans can be suggested for organising the collections. The simplest is to have three sections—home region, home country and the world. Each segment can further be subdivided into physical and human geography. Self help shall be the motto in collecting, arranging and exhibiting the geography materials.

Geography room is too overcrowded a place to accomodate the geography museum. A separate room should be made available for housing it. Here the items of furniture mostly consist of long tables, shelves and display cabinets. Cupboards and display cabinets should have

glass front and a glass top. All the exhibits should be at a height between one metre to 1.75 m. above the floor. Most of the specimens may be kept in colourless wide mouthed glass bottles, in plastic containers or in polythene bags. Each container should be suitably labelled.

Some of the exhibits like dresses, house types, settlement patterns may be prepared by the pupils in the art and craft class.

DISPLAY OF EXHIBITS

What matters most in a museum is not the number or quantity of objects for display but their proper distribution and arrangement. Here a comparison may be made between the shop of a pawn-broker and that of a general merchant, and the significance of arrangement appreciated. The following scheme may be attempted.

(a) THE WORLD

In order to comprehend the geography of the world it is worthwhile to present it under the following captions.

(i) *Natural Regions*

Through pictures, models or otherwise the geography of the natural regions may be presented. Here emphasis is to be laid to present the typical landscape, articles of diet, clothing, shelter, natural vegetation and animals. The series should be arranged in the same order as the natural regions are obtainable on the globe that is by starting from the equator and then proceeding towards the poles.

(ii) *Political Divisions*

The countries of each continent may be shown on maps. Each country will be indicated by its name, name of its capital, its flag and if possible by its postage stamps.

(iii) *Shelters and settlement Patterns*

The variety in the shelters is due partly to the economic activities of the people and partly because of their cultural differences. The basic classification is between the people who lead a nomadic and a sedentary life. Then there are the different settlement patterns—the way the shelters are arranged.

(b) HOME REGION AND COUNTRY

These constitute two different segments. But each can be divided into following sub-sections.

- (i) Rocks, Minerals and Soils,
- (ii) Agricultural Products,
- (iii) Livestock,
- (iv) Manufacturing,
- (v) Multipurpose River Valley Projects—Main Canals,
- (vi) Hydro-electric, Thermal and Nuclear Power Projects,
- (vii) Roadways, Railways and Airways,
- (viii) Political and Administrative set-up.

These aspects can be depicted by maps, models, pictures, photographs, objects and specimens.

REFERENCES

1. Birrell, W.K, (1966) *Content and Organisation of Field studies*, in Readings in Geographical Education, edited by D.S. Biddle (Whiteomb & Tombs) 133-141
2. Briault, E. W. H & Shave, D. W. (1960) *Geography In and out of School* (George G. Harrap)
3. Coleman, Alice (1970) *Field Work in Geography* edited by W. G. V. Balchin (Routledge & Keganpaul) 55-70
4. Debenham, Frank (1951) *The Use of Geography* (The English Universities Press) 11-17
5. Gopsill, G. H. (1958) *The Teaching of Geography* (Macmillan) 261-262
6. Kaul, A. K. (1965) *School Excursions for Enriching Class room Teaching—A First Prize winning Seminar Readings Paper*, Published by Extension Services Department, Govt. Teacher's College, Jammu, Publication No : 5.
7. Pattison, W. D. (1964) *The Four Traditions in Geography* in Journal of Geography vol. 63
8. Thralls, Zoe A. (1960) *The Teaching of Geography* (Eurasia Publishing House), 1st, 140-159

4

TEACHING AIDS

Referring to an investigation, what is a good teacher, Edgar Dale reports that students like teachers who are "sympathetic" and who also "explain things well". While teaching has a teacher to communicate facts, feelings and knowledge to his pupils. Teaching is a two dimensional process in which common experiences are shared by the teacher and his students. In it constant adjustments are made as a result of reciprocal feed back process. Teaching, involves both reaction and interaction. A sympathetic teacher is one who, places himself in the shoes of his pupils and, takes stock of the situation from their viewpoint. A sympathetic teacher is filled with sincere desire to help his pupils to learn. The word 'explain' is derived from a Latin word '*explanare*' meaning to spread out. During teaching a teacher has to spread his materials of instruction before pupils so that they can pick these up. Good explanation is the service which pupils expect from a teacher. The teacher has to press into service the most effective way of explaining. According to Edgar Dale, "Good teaching is essentially good communication which requires sympathetic sharing and clear explaining".

Pupils come to school to acquire knowledge, to develop values and attitudes. Education is to lead to permanent learning. Education is give and take of ideas. It is communication. Education, communication, learning, instruction and teaching are often loosely used as synonymous terms. Learning and other intellectual activities are dependent upon experiences received through sensory channels. The experiences are of three kinds; (i) Direct or first hand or concrete sensory experiences, (ii) Vicaréous or contrived or representative experiences, and (iii) Symbolic experiences. When we climb a mountain and reach a glacier we are getting a first hand or

direct experience of the glacier. But when we see its photograph or a film on it we have a vicarious or representative experience of the glacier. And when we listen to the oral description or read a written account of the same, our experience is symbolic. All the three types of experiences are necessary in the right education of the pupil.

Symbolic experience is concerned with the use of words. It is also called verbalism. It is an indirect method of presentation. It is difficult to live in the modern society without it. It is an important method of imparting instruction to our pupils. Teachers use it lavishly because it is the easy and economical method of communication. Teaching without it is impossible. But the use of words, written or spoken, alone does not provide clear learning experience.

Learning by direct experience is natural and also easiest. Here the impressions are more or less permanent, accurate and meaningful. It is the most educative type of experience. But in certain situations it is not that helpful. In the first instance it is not possible to have the first hand experience of all geographical processes, phenomena, objects, distant lands and their people. It entails great expense and time. Moreover, the reproduction or representation, at times, is better than the original item. The reproductions or representations constitute, what we call, teaching aids. The use of teaching aids supplement the symbolic experience. They render teacher's service easier. They reinforce the use of the spoken or written words of the teacher, with which they have a reciprocal relationship. Teaching aids like maps, charts and graphs are more or less abstract representations. They need to be explained. They provide rich perceptual experiences which are the basis of learning. Learning with their help becomes permanent. "Although literacy is the most fundamental method of intellectual communication, graphicacy is the most distinctively geographical from. Without spatial records such as maps, photographs and diagrams, geography would not be geography" [Balchin].

Why Teaching Aids.

In a discussion on teaching aids the first question that arises is what function is served by them or how are they

helpful to a teacher in communicating knowledge, information and skills to his students. Mcknown and Roberts assert that audio-visual aids through their possibilities of motivation, clarification and stimulation give substantial assistance to a pupil in mastering, coordinating and utilising facts, concepts and relationships to which he is exposed during his stay in the school. According to Gopsill the sound reasons for the use of teaching aids are that they provide authentic background for building correct visual imagery in children; and they provide situations in which children can learn actively; and they provide variety of stimulus, occupation, and method. Let us elaborate these one by one.

(i) Motivate Learning

The role of interest in man's activities is so well known that it needs no explanation here. The main slogan of education today is to discover and capitalise child interest. A child learns best what he is interested in and in which he feels involved. So a child needs to be motivated for learning. Motivation literally means to move. It is of two kinds; extrinsic and intrinsic. Extrinsic motivation is both negative and positive. In the negative type a pupil is compelled to do something through punishment or penalty or a fear of them. It is a depressing situation in which mental and physical energies of the child get wasted. In the positive extrinsic type of motivation a child is made to work by offering him marks, prizes, honours and other special recognitions. In such a situation a child cannot practise concentration because his attention gets divided between work and reward. In this connection Morrison says, "The usual effect is at best casual and in majority of the cases the removal of the stimulus removes the motivation as well". Brubacher remarks, "To offer children prizes to stimulate learning effort is thought in some quarters to be no better than a bribe. Such an appeal to extraneous sources of motivation, however, dose not lack apologists. Extraneous motivation operates, the apologists claim, like scaffolding in erecting a building when the buliding is up the scaffolding can be taken down. But there is a very likelyhood that the

scaffolding might become part of the building. Both of these types of motivation are not approved by the psychologists.

The doctrine of interest lays emphasis on the fact that a child has vital inherent interest and it is our duty to put it into best possible use. "The value interest, they insist, lies in the leverage it affords to gain the next level of experience." [Brubacher] A worthy motive is based on interest and interest guarantees attention. The motivation should be intrinsic. The child should work because he is interested in it. He is made to move not to avoid punishment nor for the sake of receiving a prize. He works because it brings with it satisfaction. He has a desire to accomplish something. Teaching aids in various ways help in the intrinsic motivation of children. They arouse and develop intense and beneficial interest and motivate learning.

(ii) Aid Clarification

Education is concerned with the transfer of knowledge from the teacher to his students. This he did, till recently, through the spoken word. Later on it was supplemented by the books or the printed word. Use of spoken and the written word or verbalism has its plus points. Without it no teaching is possible. But our entire dependence on it can result in faulty and fallacious learning. Verbalism is to be supplemented and reinforced by visualisation. In addition to the direct and firsthand experience of the original items, they should, very regularly, be made to experience the representations or reproductions of original items. The latter category constitutes what we call teaching aids. For a teacher of geography, for example, in India, while teaching the life of Eskimos, it is not possible to take his class to Tundra region and experience their life and living firsthand. If he resorts only to talking and telling about Eskimos there are chances of children receiving dissimilar and erroneous impressions about them. Several photographs or a film on them can help children imbibe exact and correct ideas. In explaining a certain concept it is not unusual to find a teacher using so many sentences with least response from the class. But if he draws a sketch and displays a model or a picture on the subject the outcome is decidedly gratifying. Where teacher's words fail audio-visual aids aid.

Direct experience of an object is decidedly the most educative type of experience. But under certain conditions the direct experience of its representation or reproduction is certainly valuable. Direct experiences are not always possible, because these can be too expensive in terms of time and money. Further original objects and phenomena are so complex that the reproduction for purposes of teaching is better than these. It is very easy to follow the extent and the branch ranges of the Himalayas with the help of a model than by a traversing its entire length. Similarly the original items may be too big, too small, too fast, too slow and too untimely. In all such cases the charts, maps, diagrams, films etc. perform, an excellent job in the clarification of a given subject. So, for effective and efficient teaching and learning use is to be made of audio-visual-verbal materials.

(iii) Stimulate Learning

Teaching aids create interest and help in the explanation of instructional materials. They also stimulate learning. In the first instance they captivate the attention of the pupil. During our waking hours, we know, that our mind is always on the go. A child is no exception to this rule. He is restless by nature and unable to focus his attention, for a long time, on one thing. Something is to be done to bridle his wandering mind and get it under control. He is to be provided with materials and situations which assist him to exercise this control. The rapt attention with which a child witnesses a film show or a television programme substantiates this argument.

Now that his mind is tied down with an aid the next development is that learning takes place. He gets so engrossed in the study of the aid that many of his doubts are removed and so are number of questions answered. This stimulates him to further learning. The more he learns the more he wants to learn. He is stimulated to further mental activity. He has seen a photograph, he wants, now, to see a model. This too does not satisfy him completely. He further wants to see a film on it. His curiosity gets pricked. He strives more and more to satisfy it. He gets naturally stimulated.

Teaching aids also stimulate self activity. Suppose a globe is easily

accessible to a pupil and he has a free period. He handles, examines and studies it to find answers to so many 'why's' and 'how's' that have been taxing his mind for some time. He indulges in self activity. He is anxiously waiting for the next available opportunity when he can study atlas or maps to seek additional clarification. There is no external prompting. He is driven to it because he has been stimulated for it.

(iv) Provide Variety

The pupils in a class sooner or later get fed up with a daily does of talk and chalk. Monotony sets in the instruction and pupils find the class-room situation uninspiring, dull and drab. They suffer from boredom and feel suffocated. Use of an aid breaks this monotony and introduces variety. There is variety in the stimulus. The sensations are received from an entirely different source. His experiences are completely different. In the telling procedure he was simply a passive listener. This passivity is replaced by activity. In this way there is a variety in the method of teaching and learning. When a teaching aid is in use the pupils get freedom from formal restrictions. They can move about, ask questions and make comments. There is complete change in teachers attitude as well. He becomes friendly with his pupils.

(v) Break Barriers of Communication

The relationship between education and communication has been established on several occasions so far. We must at the same time recognise that there are certain barriers to communication. These are because of the age, sex and socio-economic background of pupils. The description of a geographical phenomenon given by the teacher is bound to be visualised in their minds differently by different pupils, because of their different language abilities and varied experiences. Let us analyse this further. A teacher had a direct experience of a landform. He is to reproduce it in the class. He translates the actual experience into words and passes these on to the pupils. The pupils listen to the teacher's talk and retranslate his words back into the original image. McKnown and Roberts remark that, "In this process there are many opportunities for error, misemphasis, misinterpretation and misunderstanding". The barriers to communication can be broken if the pupils in the class have a common experience with an audio-visual aid. The

ideas conveyed through telling can be authenticated by the firsthand brush with the teaching aids.

(iv) Learning Situation

Teaching Aids when properly displayed, or made available to the pupils, create a learning atmosphere. It is worthwhile to put pupils in such learning situations where they discover facts for themselves and interpret what they have observed. (This has been discussed in detail in chapter 3-Geography Room).

(viii) Bring the World into Class Room

The raw materials of geography are found outside the class room in our environment and all over the world. The ideal method for their study is 'going and looking'. But this is not always possible. The alternative procedure is to bring the world into class room. This can be done easily through its representations. The multiplicity of teaching aids used in geography teaching and learning help in bringing the reality into the class room. This can be done easily through its representations and reproductions. The interest evinced by children in geography is based on this fact. The profusion of illustrations depicting contemporary world is an essential feature of a geography text book. Map as an essential tool of a geographer is the unique contribution of this discipline. Maps on different scales present different perspectives of the world. Globe as the replica of the earth in space is unmatched in its appeal and purpose. With his atlas open in front of him a child can merrily glide down the Volga in a steamer, drive his automobile through the streets of New York or cross over Andean heights from Argentina to Chile. The distant lands and their distinct people come alive before his mind's eye, with the help of teaching aids, as if they lived next door.

(viii) Permanent Learning

One of the important functions of education is to lead to permanent learning. How can this be achieved? Ordinarily it is very difficult to understand a fact or a principle when it is conveyed to us by verbal description alone. When a pupil has a firsthand experience of an aid his learning is more or less permanent because it is easy to understand and master as it is concrete. Further, the pupil gets an opportunity to manipulate an object or a specimen. All human beings by nature are manipulators. When we touch, handle, and operate an aid we have greater

permanency of impressions. The child gives full and intense attention when he experiences a teaching aid. His deep involvement during the use of an aid also helps in effective learning. Passive listening is replaced by active and attentive participation. All these factors favour permanent learning. "School will become an interesting place if it proves to be a place where students have interesting experiences where they see, hear, touch, taste, plan, make, do, and try. When a school provides many of these rich experiences it will promote effective learning. It will carry on the kind of education that fosters "permanent" learning [Edgar Dale].

(ix) Widespread Education

Such mass media, as radio and T.V., have helped us in spreading education to large number of people living in far off places. This application of the new means of communication for education gave birth to educational technology. Most of the educationists, in our country, are concerned with the need to improve quality of education, to widen access to it and reduce its existing regional disparities. The Educational Technology Programme aims at contributing to the achievement of these aims by deploying the modern communication technology, notably the mass media, in the educational process. (RWGET—1978). Educational technology can be classified into hardware and software.

Hardware involves the application of different types of sophisticated equipment for purposes of instruction. This can be attributed to the impact of great strides taken in the field of science and technology during the present century. Hardware introduces mechanisation in the field of education so that teacher, with less expenditure, can educate large number of students. Hardware includes motion pictures, teaching machines, tape recorders, television, computers and even communications satellite facilities.

Software is based on behaviourist school of psychology where the underlying principle is to build in the learner a complex repertory of knowledge so that his behaviour is modified. It involves selection of appropriate learning strategies, task analysis, immediate reinforcement of responses and constant evaluation. Books, magazines, newspapers, educational games and flash cards may also be included in software.

Classification

Teaching aids can be classified into a number of categories like the non-projected aids and projected aids, audio visual equipment, and activity aids. Each group has certain common characteristics. Non-projected aids are used as such. They are presented in the class, displayed properly and put to use. These can be divided further into three groups, (a) graphic aids like photographs, pictures, charts, maps, etc. (b) display boards like chalk board, bulletin board, flannel board, and (c) three dimensional aids like models, globe, objects and specimens. The essential requirements of a projected aid are electricity, projector, screen and a dark room. Projected aids include films (sound motion pictures), film strips, slides, overhead projector, and epidiascope. Radio, T.V. and tape recorders constitute audio-visual equipment. The activity aids are excursions (field trips), demonstrations and dramatics.

TEACHING AIDS

NON PROJECTED

- (a) *GRAPHIC*
Pictures, Photographs, Posters,
Maps, Diagrams, Graphs, Atlas
Charts, Cartoons, Comics
- (b) *DISPLAY*
Chalk board, Bulletin board,
Flannel board
- (c) *THREE DIMENSIONAL*
Objects, Specimens, Globe, Models,
Dioramas

PROJECTED

- (a) *SILENT*
Slides, Filmstrip, Epidiascope,
Overhead Projector
- (b) *SOUND*
Films (Sound Motion Pictures)

EQUIPMENT

- (a) *AUDIO*
Radio, Tape Recorder
- (b) *AUDIO-VISUAL*
Television

ACTIVITY

- Excursions (Field Trips)
- Demonstrations
- Dramatics

(A) Graphic Materials

Wittich and Schuller define graphics as materials which communicate facts and ideas clearly and forcibly through a combination of drawings, words and pictures. These visualise and simplify ideas and facts. They attract attention, convey meaning clearly and facilitate learning. Graphic materials can be used as such by displaying them suitably in the classroom. If the facilities are available these can be projected on a screen with the help of an epidiascope, slide projector and overhead projector. They can be put on a chalk board, bulletin board and flannel board. A geography teacher has to use these aids regularly for effective teaching. With their help he can easily communicate with his pupils and at the same time explain things clearly. Below is given a list of graphic materials commonly used in the teaching of geography.

1. Pictures

These are also called flat pictures or still and silent pictures. These are identified with photographs, drawings, paintings and illustrations. What do pictures do? Pictures capture slices of reality—and tell a story in a language all their own [Wittich&Schuller]. Theirs is a universal language. A person, whether educated or illiterate, can understand a picture. It is an old familiar friend of man. From the very early times pictures have been a medium of his self-expression. These he drew even with a piece of charcoal on the cave walls. He has always found drawing of pictures as an indispensable tool for expressing ideas or conveying information. It is not surprising to find that originally the written language was pictorial.

Pictures serve number of purposes in our educational process. They visualise symbols or help in the development of meaningful vocabulary. Pictures provide language symbols with meaning. They also help in the formation of accurate concepts. As one reads or listens words these are translated into mental images. In order to have accurate and uniform images use is to be made of graphic illustrations. They save time and effort in teaching-learning process.

One has to be quite careful and selective in using pictures in geography. There are three types of pictures to be selected. Those which depict (a) natural features, phenomena and landscape, (b) cul-

tural features, and (c) natural-cultural landscape. The first two types may show isolated facts. These are essential for the development of vocabulary and concepts, while the third category helps in finding geographic relationships.

The flat pictures to be used as teaching aids in a geography class, must be large, clear and distinct. Its geographic quality should not be sacrificed for its artistic attributes. It must be correct and authentic. Geographical facts can easily be elicited when the observation of the picture is followed by a series of questions asked on it.

The value of pictures lies in their being real and vivid. These bring clarity and enriched meaning ; are inexpensive and easily available ; are convenient to can be used frequently.

(ii) Charts

Generally speaking the term chart includes a number of graphic representations as pictures, maps, diagrams, graphs and posters. But chart is a distinctive medium of visualisation with its peculiar characteristics. It is defined, by Wittich and Schuller, as combinations of graphic and pictorial medium designed for the orderly and logical visualizing of relationships between key facts and ideas. The particular role of charts is always to show relationships such as comparisons, developments, processes, classification and organisation.

Charts are of different type. Those commonly used in geography are tree, stream, flow, and tabular charts. *Tree Chart* represents development, growth and change. Here we begin with the single source—the trunk of the tree—and then spread out into many branches. On the contrary in a *Stream Chart* many tributaries combine together to give rise to a single channel. In a *Flow Chart* rectangles, circles lines, arrows etc. are used to depict functional relationships. When the data is presented in a columnar form, for comparison and contrast, the chart is *Tabular*.

The essential feature of a good chart is its simplicity that is it must be easy for pupils to see and read.

(iii) Diagrams

A diagram is a visual symbol made up of lines and geometrical

forms [Edgar Dale]. It is an explanatory drawing that explains interrelationships. In it symbols are used and pictorial elements are absent.

Diagrams because of their symbolical and abstract nature are difficult to understand. These must be properly constructed if used as teaching aids. Diagrams, drawings and sketches should be drawn neatly and correctly. They should be properly labelled and explained. They should be large enough to be seen by the entire class. On the chalk board it can be drawn with coloured chalk. Even pupils should be encouraged to draw neat diagrams and sketches on their notebooks. The function of a diagram is to clarify meaning.

(iv) Graphs

Graph is the visual representation of numerical data. It presents statistical or quantitative materials in simple and interesting form. Through graphs comparisons of areas, distances, quantities, values is facilitated. Statistical data is unappealing and uninteresting for the school going boy or girl but when put into graphic form it captivates his interest because it becomes concrete and vivid. A mere glance at a graph conveys and clarifies many facts, relationships and generalisations, which are difficult to grasp even by close examination of quantitative data. About graphs Henry D. Hubbard has said, "There is a magic in graphs.....wherever there are data to record, inferences to draw or facts to tell graphs furnish unrivalled means whose power we are just beginning to realise and apply." The various types of graph are ;

(a) Line Graph

This graph is useful plotting in trends or relationships between two series of data. It is used particularly when the data are continuous. Mean monthly temperature of a place can be presented by a line graph when temperature and months are plotted along the vertical and the horizontal axis respectively. It is also called trend graph.

(b) Bar Graph

It is easy to construct and read. In it the bars may be horizontal or vertical. They are of unequal length but of equal width. It can be used to show two series of data. It may be used to show rank, in which case the data is to be arranged in a descending or ascending

order. It may also be used to show distribution over a certain period of time. In a compound bar a greater variety of data can be used.

(iii) *Circle or Pie Graphs*

Here the circle represents the total area. It is divided into sectors which represent the percentage of the total area. For better visual appeal the sectors may be shaded, cross hatched or coloured.

(iv) *Pictorial Graph*

Here in place of lines, bars circles or rectangles the quantitative units are represented by pictorial symbols. The symbol should be easily identified with the subject and it must be used consistently because these introduce interest and realism.

(v) *Maps*

Maps make an essential item in the category of graphic materials. In maps ideas, objects and principles are shown through such pictorial forms as lines, colours, figures and numerals. The overall effect created by the combination of these symbols in a map makes it an amazing visual representation of the earth's surface or a part of it, which otherwise would be difficult to comprehend directly. Maps give the size and location of the areas represented, display relationships and reveal patterns.

"Man is map minded", remark McKown and Roberts," and he could not live if he were not". Maps are very significant for his existence. It is believed that map consciousness dawns in a baby as soon as he differentiates between mother's lap and the cradle. From his birth to death a person is using maps either mentally or graphically.

Drawing of maps and pictures, based on the visual-spatial ability of the human mind, began much early in the story of man. It took shape much earlier than the origin of the written alphabet. Maps have been prepared by all the ancient civilisations like the Egyptian, Babylonian, Greek, Roman and Chinese (in the old world) and by the Aztecs and Incas (in the new world). These maps have been drawn on and with all sorts of available materials including clay tablets, sand, palm leaves and sea shells. The earliest map is 4,500 years old and is a Babylonian clay tablet from *Ga Sur* [Babylon]. The sea charts prepared by early Eskimos are valued for their quality.

But map-making based on survey and cartographic principles is a recent development. It did not keep pace with the discovery and exploration of the earth. This handicap thwarted the development of geography as an academic discipline. Through maps geography makes visible what is ordinarily invisible. This trait is not confined to geography but is an important feature of other disciplines. Meteorology does the same with the help of instruments, history through documents and biology through the use of microscope.

DEFINITIONS

Map, to some, may be a miniature picture of the earth. But it is not so, it is something more. It is far more complex than a picture. "It is a visual representation on a flat surface, of land and water masses of the earth or some part of it" [Kinder]. It is a graph based upon certain mathematical formulae in which many symbols are used for portraying surface features of the earth. These may either be natural or man-made. Map is a method of recording the position of natural and cultural features which can be observed. "Maps are flat representations of the earth's surface which convey information by means of lines, symbols, words and colour" [Wittich and Schuller]. A map may also be defined as the proportional representation of the earth's surface or a part thereof, on a plane, in which certain conventions are used. To Woolridge and East 'a map, properly speaking, is a picture, to scale, of the ground and its visible features'.

Is map a true representation of the earth? No. Our earth is a spherical body and map is only a flat surface. The transfer of sphere on a plane surface involves the distortion of distances, direction, shape and area. The only true representation of our earth is a globe. But for certain reasons like size, difficulty in manipulation etc, a globe cannot be used in all situations and always. It is the map which, despite its shortcomings, is an essential tool of universal use in geography and other disciplines.

PURPOSE

Map, as we know, is the reduced representation of the earth's surface or a part of it on a plane surface. It is a tool of communication as well as a tool of research. Let us see what purpose is served by it.

(i) World understanding

Ours is a "shrunk" world where with the conquest of distance the nations of the world have come near each other. This has brought in its wake numerous challenges and problems. It is necessary for us to have a clear understanding of the countries and their people in order to live in peace. Every citizen of the modern world is required to have a working knowledge of maps and globes. Maps are an important means of understanding the world. In this connection Heintzelman and Highsmith remark. "The ability to read and use maps is essential for all citizens of the modern world, for maps, like the printed word, are an essential part of modern communication. The businessman, industrialist, engineer, scientist, teacher perform many of their occupational duties with maps. Both the office worker and the artisan drive an automobile through an unfamiliar area, seek an address in a large city, plan a vacation and comprehend world events with the aid of maps. Our horizons have expanded beyond the local community and our range of interest encompasses the entire globe and universe; therefore, no one can be fully equipped for everyday living without developing map intelligence".

(ii) Source of Information

Maps provide us with a wealth of information. They serve us as locational guide for natural and man-made features on the surface of the earth. It is through the map we can know the absolute and the relative location of a place or landscape feature. It helps us to know the shape, size, area, distances, directions elevation of the earth features and also the distribution of cultural features.

(iii) Planning

Maps are the basic tools for planning developmental projects. The choice and location of a dam, power house, canal, electric transmission system, flood control measures, industries, refineries, and the like can only be decided when the right type of map is available for consultation and study. "Adequate basic map data are essential in developing natural resource and in

planning economic and social projects. Whether a project involves water conservation....., whether it concerns flood control....., whether it concerns power development....., whether it deals with safe navigation, town planning, transportation..... any such study benefits from a sober study of maps. [U.N. 1954].

(iv) *Aids Visualisation*

It is not possible to see all parts of the world. We see some places and on the basis of these observations we visualise far away and distant places. Map is an important asset in this connection. The occasional news broadcasts kept us informed about the voyage and movement, activities and tasks of the II Indian Antarctic Expedition, 1982-83. We could visualise the events with the help of a map and some pictures. The presence of the great powers in the Indian Ocean, the establishment of American military base in Diego Garcia is a matter of great and grave concern to India and other independent littoral states of Asia and Africa. Indian Ocean is more an enclosed lake than an open ocean. All these and other allied facts can be comprehended with a map. Sitting in India, we can understand the geography of U.S.A and U.S.S.R with the help of world map and maps of these countries.

(v) *Study Relationships*

Maps help us in finding relationships. An exercise of this kind can be carried out with the help of two or more maps. A striking relationship is discerned when a railway map of a country is compared with its relief map. Another interesting relationship can be established when the population map of India is compared with its rainfall map and soil map.

(vi) *Teaching and Learning*

Maps play a vital role in the teaching and learning of geography and other subjects. Maps, with their symbols and colours, are attractive visual aids. They captivate pupils attention. When once he gets interested in its study he tries to find answers to a series of his questions. Whether it is an atlas map spread on his table or the wall map to which the teacher is referring time and again he has some fact, idea or concept to learn and classify. Maps help the teacher to do his

'explaining'. Maps help to illustrate and communicate ideas. As a tool for communication it is used extensively and in a variety of forms. It is for this reason, it has been suggested, that there should be a good collection of maps in a geography room. Some of these are displayed constantly and help create an ideal learning environment. "As educational devices, maps help pupils to visualise and localise important world realities which he could never realise, understand or appreciate from oral or written descriptions or even photographs and which he could never see himself... .. The map, as a record of spatial concepts, tells a story as nothing else can tell it. Naturally, then, pupils must be taught to read these stories intelligently. Maps..... are used for both group and individual instruction. They are utilised in connection with every subject in every curriculum", [McKown and Roberts].

KINDS OF MAPS

Maps are classified on the basis of their form, content and scale. According to their content maps are divided into three main categories—physical, political and special purpose or *thematic* maps. Various methods are in use for representing the surface features of the earth. It presents to us the natural environmental setting of the area mapped. Political maps, present a flat appearance of the earth in which emphasis is on boundaries—international, state, district or village. It is a map used in history books and in newspapers. A combination of these two types, *physical-political*, is the map used in geography education. Thematic or special purpose maps depict one theme only. It can be a soil map, precipitation map, vegetation map, road map, railway map, economic map and the like.

On the basis of method of presentation or form maps are classified as wall maps, atlas maps, chalkboard outline maps, student outline maps.

Maps have a small scale or a large scale depending upon the area depicted on them. When on a sheet of paper the map of the world is drawn, it has a small scale. Here the scale of the map can be 1:100,000,000. Such maps are found in an atlas. Even wall maps are made on a small scale. On the other hand when the map of a village or a block is drawn on a similar sheet of paper, it depicts a

smaller area. Its scale, therefore, shall be large. Survey of India topographical sheet is an example of a map with a large scale. It has a scale of 1 : 50,000. British Ordnance Survey maps have still large scale. They are drawn on a scale of 1 : 25, 000. Such maps help us in showing a small area intimately.

SIGNIFICANCE

The basic concern of a geographer is to describe and to interpret the surface of the earth. In order to do so he needs some tools. One of the most important tools of a geographer is a map. He sets out for the investigation of a problem with the help of a map. At the end of the investigation when he is ready with his findings he again uses the map for the presentation of his results. "The map", writes Bryan Wailes, "is the beginning and end of geography. It underlies all geographical study." A geographer needs maps for two reasons. In the first place it is not possible for him to visit every place and maps help him in knowing other places without visiting them personally. Here we are aware of the fact that the earth is his primary document and a map, with its limitations only a secondary document. The second reason is that with the help of a map he is in a position to crystallise and codify his knowledge. If used properly and correctly, maps reveal patterns and relationships which cannot be perceived ordinarily by direct observation of the ground. It is, therefore, the duty of a geographer to use maps. He uses them both for investigation and interpretation, for "finding things out" and for "showing things" and also for visualising patterns and relationships.

Map, we have learnt, is a substitute for the real thing and if used by the teacher together with his experience, pictures and other visual presentations it conveys total impression of a landscape. It helps us in the understanding of the place much better than our on-the-spot-study. Map has value as a co-ordinator. It integrates. It brings together the geographical features both cultural and natural. In a map colours and symbols are used to indicate the development of the cultural landscape in relation to the physical background. Mikhaylov, in his *Soviet Geography* writes, "The map is a social document. It fixes time with its symbolism, alternation of colours and peculiarity of design. The lines on the map are the hand writing of history".

The close relationship of maps and geography is conveyed by the statement that what cannot be mapped is not geography. Dr. H. R. Mill wrote in this connection "In geography we may take it as an axiom that what cannot be mapped cannot be described". Some people have relented and remarked that 99% geography can be put on a map.

The significance of maps in geography is given in the words of Heintzelman and Highsmith, "Maps, therefore, serve geography not as a tool for *seeing* and *analyzing*, but also for *illustrating* graphically. Truly, as the telescope is indispensable to astronomy and the microscope to biology, so is the map indispensable to geography. Any student of geography, therefore, must understand this vital tool." the map..... Olive Garnett remarks, "By means of maps the geographer expresses a large part of his knowledge most accurately and completely, and at the same time most clearly and simply. Maps are, also, to certain extent, his raw material, his sources of information". Frank Debenham, in his book, 'The Use of Geography' writes, "A map tells a story; it is most complex form of shorthand, saving pages of descriptive text. Not only does it show the relative position of places and features; it also may give a considerable amount of information as to the details of such places and features".

MAP SKILLS

In each curricular area in the school there are certain skills that must be mastered. Number of skills are to be learnt in order to speak or write a language correctly. In a biology class the skills to be learned include cutting of sections and preparation of slides. In case of maps, it is well known that they are written in a kind of 'shorthand' or in a 'foreign language'. The map language is to be used while recording field observation on a map. The map language already present in a map is to be decoded while studying and interpreting a map. Map making involves the use of number of skills which every student of geography must know, well and thoroughly, for the clear and correct understanding of a map.

(i) Surveying

The basic process involved in the preparation of a map is survey. This is carried out with the help of certain instruments like chain, plane

table, prismatic compass or theodolite. For measuring heights clinometers and levels are used. In the triangulation method a base line is taken on which a series of triangles are built. The apices of these triangles give us the reference points. The details are filled in by measuring angles or distances. Pupils of secondary classes must know rudiments of surveying so that they understand how maps are made.

(ii) *Projections*

Our earth is a sphere. Its curved surface is to be transferred on to a flat sheet of paper which naturally involves number of errors. The position of a place or a region on the surface of the earth is fixed by latitudes and longitudes. The network of these lines is called a graticule. In the preparation of a map it is actually the graticule that is to be transferred from the globe to the plane surface. The method involved is called map projection. Ordinarily in the preparation of a map distortion of direction, distance, shape or size takes place. A map projection tries to preserve shape or size or direction. A geography student must know underlying principle, use merits and defects of some common map projections.

(iii) *Scale*

It is not possible to map a certain area of the ground on a flat surface of equal size. It is drawn of some smaller size. This introduces the need for drawing to scale. Scale, simply stated, is the ratio between the map-distance and ground-distance between any two stations. Scale on a map is expressed in three ways, (i) by a statement, (ii) by representative fraction, and (iii) by a graphical scale. The scale of an atlas map in terms of representative fraction is 1 : 100,000,000. In the form of a statement it reads 1 cm to 1000km. Graphical scale is actually drawn on a map. It is divided into primary and secondary divisions.

(iv) *Direction*

Every child is expected to know cardinal directions. With this knowledge he shall be in a position to orient the map correctly and locate places on the earth. In the elementary classes the directions should be taught with the help of sun position. The sun in the morning is in the eastern sky and in the evening in the western sky. North and

south can be introduced with the help of these two directions. At a later stage the direction can be taught with the help of the noonday shadow of a vertical pole, which always points towards north. At night direction can be learnt by reference to the pole star. In classes IX and X use can be made of magnetic compass. Children must also know other directions like southeast and northwest.

(v) *Conventional Signs*

The symbols used in the preparation of a map represent physical features, cultural features and in certain cases economic data. The children must be familiar with this sign language of the maps. Certain principles must be considered in this connection as suggested by Zoe. A. Thralls. Every map symbol must be visualised. Here we take a clue from language teaching where with beginners, emphasis is laid to associate the word with the actual object. In geography symbol is to be linked with child's experience. The teacher should see that the map symbol is associated with the actual landscape feature. This can be done by asking the child to prepare a map of the school area by using appropriate signs. Map symbols should be used when needed. It is inadvisable to burden the child with a long list of conventional symbols. Instead he must be introduced to those which are needed by him.

In addition to conventional symbols certain colours are used in maps, as for example, blue for water and brown for land. In land use colours used are yellow for cultivated area, dark green for forests, light green for grassland etc. Ample opportunities are to be provided to children to pick up map language so that map making and map study becomes convenient for them.

WALL MAP

For certain reasons maps have a universal use. They can be easily handled and stored. Maps can be bound in the books and in the form of an atlas. Maps can be made on any scale. These can be made of the whole earth and also of a single street or a village. These can be made to show large number of details.

When a map is provided with rollers and displayed from a support in a wall it becomes a wall map. Wall map lends itself to group or

class teaching. With a pointer in his hand, the teacher refers to it while talking to the class. A good wall map, generally, should portray one theme only. In that form it becomes the most effective teaching device. The function of the wall map is to present major features which can be seen by all the class. It should not be crowded with too much information. It should be of large size, properly designed with good colours, and printed in bold letters so that it is visible to and understood by all students. It must be simple, clear, accurate and diagrammatic so that it is comprehensible. To sum up, a wall map must be, a) clear, b) accurate, c) large and, d) strong.

Another type of wall map, in common use these days, is the roll up black board map with the outline of the world or a country or a state drawn on it. This can be put to use according to the needs of the lesson. It is called black board or chalk board, roll-up, outline map.

Atlas

Atlas is a collection of maps bound into a volume. The maps have, mostly, a small scale. These are printed in pleasing colours, on thick paper and are full of details. An atlas should be light and easy to carry.

It should be always open on the pupil's table for use. During the development of a geography lesson a pupil may have to refer to it, which he may do of his own. It is a reference volume for him which he may be using for a variety of purposes both in the school as well as in his home. Like a story book it can be read. The child can go on imaginary or real flights from one continent to another, from one city to another in the same country and pick up lot of geography incidently. In the company of his friends or classmates he can play games, with its help or arrange quiz contests. He can measure distances and directions in order to check the authenticity of a certain statement or just for pleasure. After tracing some maps, of the same country, he can juxtapose them to find relationships. In this way lot of new knowledge can be acquired with its help.

Atlas lends itself to individual work and should be used before the use of a wall map.

DISPLAY BOARDS

(i) *Chalkboard*

A flat smooth surface, which is painted black or olive green, with white or yellow chalk, makes up the blackboard or Chalk board. As the lesson proceeds the subject matter develops visually on it. It is an easy and rapid means of communicating with the class. It is one of the oldest, simplest and cheapest teaching aids. It is an essential piece of equipment in a geography room.

The chalkboard, as a visual aid, can be used for a variety of purposes in a variety of ways. It is used for writing new terms, place-names and latest data. In the explanation of a new idea a teacher finds it necessary to draw a diagram or a sketch. He labels it properly and writes a brief explanation below it. He strives to present a neat and orderly chalk board work. The pupils following the footsteps of their teacher attempt similar drawings on their note books. Chalkboard work can be made more attractive with the help of coloured chalk.

It will be easy for the pupils to learn the geographical facts when chalkboard is used constantly along with other teaching aids by the teacher. Even the pupils will be provided with opportunities to use the chalkboard. It is an indispensable aid.

(ii) *Bulletin Boards*

A bulletin board provides an ideal space and surface on which a variety of display material is fixed. This visual material is constantly changed and replaced. In arranging the display material the pupils pool their efforts with their teacher. They select a topic which needs to be supplemented by visual display and set on the work. It has number of functions to serve. "It can be used to motivate the students, develop interesting phases of the unit of study, announce new units of study serve as a point of reference for introducing other types of audio-visual materials, and to serve as a place for student display of individual and group projects" [dekieffer and Cochran].

(iii) *Flannel Board*

It consists of a wooden board with its flat surface covered by a

flannel sheet. Generally the flannel sheet is glued to it. Number of separate illustrations are fixed to pieces of card paper. On the back side of each illustration is glued a strip of sand paper on the card paper. When these separate pieces—illustrations are placed on the flannel board they stick to it. Generally, a flannel graphic kit is prepared in which relevant illustrations are collected and used when required.

Three Dimensional Aids

(i) *Objects and Specimens*

In the teaching learning process the oral and verbal descriptions should be supplemented by the use of concrete materials. Regarding the use of three dimensional aids Commenuis wrote, “present the thing itself and the real intuition of it” and Rousseau advised, “In general never substitute the sign for the thing” Objects, specimens and models can be very useful in helping pupils to understand and appreciate the elements of his environment.

Objects are the things themselves and specimens are the parts of objects. Objects and specimens are frequently used to familiarise pupils with their natural and cultural environment.

(ii) *Models*

We may bring a piece of limestone or basalt in our classroom but it is not possible to bring a hill into it. In such situations we prepare a model of a hill. Models are defined as the replicas of objects. Young children mostly use and manipulate models when they are playing with their toys. Models are of three types— (i) solid models, (ii) cross-section models and (iii) working models. Model of a hill, a v-shaped valley. Bhakra Dam are examples of solid models. With their help we can know the external features of an object. We can have a cross-section model of a volcano showing the crater, vent, sills and dykes. We can have such models of a number of relief features. Working models demonstrate processes. A working model of an artesian well, a geyser, a hydroelectric power house are some common examples. The role of sand tray in model making has already been explained.

(iii) *Globe*

A globe is an accurate three dimensional representation of the earth.

It presents the true shape of our planet and is, therefore, called its true map. It is the representation of the earth in which there is no distortion. "The globe", writes McKinney, "gives the best visual illusion of the earth as seen from space, and is the most direct and versatile instrument for mathematical analysis". Globe is used to show true shapes, proportions and distances. The basic fact that can be illustrated with the help of a globe is the oneness of the world. It is an essential tool for knowing correct concepts of world relationships. "A methodical, logical and very meaningful understanding of our planet earth in the classroom situation is only possible by a globe [Dikshit & Henry]. In addition to the shape of the earth, the concepts clarified by it are the distribution of land and water, the relation of the continents and countries, the extent of the oceans, formation of day and night, phenomenon of seasons, local time, standard time, wind deflection and current deviation due to rotation, calculation of time, air routes, international date line, map projections etc. It helps in the acquisition of basic geographic vocabulary, like the axis, its inclination, rotation, revolution, meridians of longitude, parallels of latitude, tropics, polar circles, equator, poles circles of illumination and the like. A globe can be used to explain the voyages and journeys undertaken during the discovery and exploration of our world. In a discussion on current events it is again helpful to us.

Types and Sizes

For elementary class pupils a globe of 20 cm diameter is recommended. Such a globe can easily be handled by them. But in the secondary school globes of 30 cm. or 40 cm. diameter should be provided. It may be political or political-physical globe. In addition, there must be slate globes available for use. Globes may be fitted on an axis or mounted in a cradle. The axial globes are essential for studying those relationships which are associated with earth as a planet in space. Cradle mounted globes facilitate the study of any part of the world.

Use

Globe should be used with the beginners. It must be used before a wall map and an atlas. At a later stage it should be used in conjunction with maps, pictures and other aids. A beginning learner requires nothing but just a direct contact with the real world in his initiation to geographic study and that contact in the classroom is possible by a globe", write Dikshit and Henry.

PROJECTED AIDS

For their use we need a special type of equipment called a projector, which works on electricity. A screen is needed on which the images are projected. In its simplest form a projector consists of the following three parts, a) a concave reflector, b) a condenser, and c) a projecting lens. Between the concave reflector and the condenser is an electric bulb of high wattage. This serves as the source of light for projecting the images. Between the condenser and the projecting lens is placed the slide or film strip. The projecting lens forms a real, enlarged but inverted image of the object on the screen. The slide or the film strip should be placed in the inverted position in order to get the correct image. A slide projector with slight adjustment can be used as a film strip projector also. These are easy to handle and use.

(i) *Slides*

A slide is a transparent picture made on a 5cm. \times 5cm. piece of clear glass or cellophane. The picture obtained on the screen is large enough and high enough for everybody in the class to see. Like other projected aids they arouse and maintain high student interest. Lot of geographical information can be put on a slide. If handled with care these can be used repeatedly.

(ii) *Filmstrips*

A filmstrip is a related sequence of still pictures on a strip of 35mm. film. Each picture in the filmstrip is called a frame and it measures 20mm \times 25mm. There can be 20 to 50 frames in a single filmstrip. Its total length is 0.6 m. to 1.5 m. The film strip may be black and white or in colour. In each filmstrip the frames proceed in a logical sequence from the beginning to the end. It covers one theme. The frames can be projected, if and when desired, all along the development of a lesson. A wide range of filmstrips on geographical topics is available these days. A film strip, when not in use, is rolled up and placed in a plastic container. It takes up little space and can be easily stored. It is relatively inexpensive and every school can and should have a good collection of these on the topics taken up for study in various classes. A picture may be projected on the screen for a time the pupils desire it to be there so that they can attempt a drawing of the same on their note books.

(iii) Epidiascope

A slide or a film strip is a transparent object and its projection on the screen involves the use of simple equipment, described above. Sometimes need is felt for projecting a photograph available in an encyclopaedia, a map from a magazine, a diagram from a news paper, a sketch prepared by a pupil on his note book. All these constitute opaque objects. We require a special type of projector for this purpose which is called episcopes. In this we have a strong source of light, a mirror and a cooling fan in addition to other items mentioned in case of the slide projector, which is also called a diascope. So if an equipment has facilities both for the projection of opaque (episcopes) and transparent objects diascope, it is called epidiascope. Epidiascope, but for its cost, is the most useful equipment in a geography room. Pictures, maps, diagrams, charts and other visual representations obtained from a variety of sources can be used for geography teaching with its help.

(iv) Overhead Projector

This is the latest addition in the list of projected aids. It is placed in front of the class and the image is obtained on a large screen fitted along the front wall. It is provided with a transparent stage or platform. On it transparencies of the size of 25 cm. \times 25 cm. are used. While using it, it is not necessary to darken the room.

With the help of the overhead projector simple sketches, maps, diagrams, definitions and calculations can be obtained on the screen. It combines the functions of a slide projector and a chalk board. The teacher is seated facing the class close to the stage of the overhead projector. A transparent plastic sheet, for example, with outline map of India drawn on it, is placed on the stage. The teacher describes the physical features of India and at the same time fills in the information on the map with a ceramic pen. The same is projected on the screen. In large class rooms, where chalkboard is ineffective, overhead projector is put into use. It is no exaggeration to call it the 'wonder aid' of the class rooms of today.

(v) Films

These can better be called sound motion pictures or movies. In schools we generally use 16mm films. These can be projected with the

help of a 16mm cine-projector. The films used as aids to instruction are called educational films. These must be differentiated from the commercial or entertainment films. Educational films are characterised by short duration. These run for fifteen to twenty minutes. It is made on some educational topic.

Educational films can further be classified into a), instructional films and b), background films. Instructional films actually teach, just as a teacher does. Here film sequences are followed by a commentary and the film teacher explains a particular concept with the help of the audio-visual media at his service. The last two or three minutes in the film are devoted to the recapitulation of the topic. Before the actual screening of the film the class teacher must prepare the class for it. At the end of it he can ask questions for evaluating the usefulness of the film.

A background film is screened before a particular topic is taken up for study. During the screening of such film the teacher and his class have a series of common experiences. During the exposition of the topic the teacher can refer to these experiences to explain or elaborate a principle or a fact. Educational films can be loaned from several film libraries at Delhi or else where.

Audio-Visual Equipment

(i) Radio

Radio is one of the mass media. Like commercial cinema and popular press, radio speaks and reaches to an ever expanding audience. Radio is one of the most powerful methods of mass communication. It has almost become an integral part of the lives of the people in most parts of the world. It has created a multitude of listeners. Radio is a universal means of broadcasting news. Through its broadcasts it entertains and educates.

Radio constitutes a useful and far reaching aid for enrichment of learning. Its role for supplementing the class room teaching has since been realised. There is hardly a state where a few hours are not reserved for education or school broadcasts. The role of radio in education has been established by George Watson in these words, "Radio is not an addition to education Radio is not something to be placed on top of education. Rather, radio is education."

Some of the educational contributions of a radio broadcast are immediacy, interest, authenticity, realism, availability and discrimination.

Broadcasts have an air of immediacy. In live broadcasts programmes are transmitted instantaneously. It presents up-to-date and latest information as against stale and outdated information contained in textbooks. It can bring enrichment to any area of study. Radio programmes arouse and hold the attention of one and all. Students have a receptive attitude towards a radio lesson. Enrichment by the radio is followed by authenticity. Since we have the radio programme by experts in their respective fields these are a good source of authentic information and opinion. Radio broadcasts are available in all parts of the world. It reaches everyone whether he lives in a city or in a rural area. The reception is good every where. Realism is the watchword of radio broadcasts. The radio reporter witnesses the event firsthand, is face to face with reality and at the same time conveys his observations and feelings to us. When trained to listen to good radio programmes, the pupils become discriminative listeners. Radio broadcasts are, comparatively, inexpensive.

Radio is only an audio-aid and its role in enrichment of geography lessons cannot be as vital as in T.V. programmes. Geography teaching without maps, globes and other aids is not possible. But inspite of this inadequacy, radio has been successfully used in geography teaching. The radio teacher, an expert in the field of geography, presents the enrichment material in the form of simple talks, discussions and radio features. In certain programmes pupils are also made to participate.

Educational programmes are broadcast during school hours. It comprises three steps, pre-broadcast, broadcast and follow up. Before the actual broadcast the class teacher has to prepare his class for the radio lesson. He may direct them to open their atlases or display wall map, if the lesson demands the use of the same. During broadcast the teacher should see to it that pupils are provided with uninterrupted listening facility. In the follow up, the radio lesson is evaluated. Here the teacher has to appraise the assimilation of the learning material by asking them to fill in response sheets.

(ii) Television

When a boy was asked to define television, he said, "It is like having movies and radio at the same time." Television is an audio-visual aid which combines in it the qualities of a radio and the motion pictures. It appeals to both sight and hearing and portrays action.

What significance printing press had for fifteenth century, television has for twentieth century. It is an exciting means of mass communication which in effectiveness excels everything else which our civilisation has known so far. It is for the first time in history that we are in a position to witness, with our eyes and ears, two events simultaneously. We can be in two places at the same time, for example, in our homes experiencing what is happening there and at the same time seeing and listening to the story of man or the animals living in the sea. When the T.V. programme is on it demands and holds our entire attention. It has an immediacy that spans time and space. The realism introduced by it is unsurpassed. In colour T.V. greater reality is presented.

As an audio-visual aid and a means of instruction it includes the functions of maps, globes, charts, motion pictures, slides, models, specimens, and even the chalkboard. It replaces field studies to inaccessible and dangerous places. It is not worthwhile for pupils to visit such places and the T.V. brings the places into their classroom. It has, therefore, composite teaching advantages of a host of other audio-visual materials.

The educational value of television has since been realised. Regular educational programmes are telecast for school children. These programmes are available for larger audiences with the help of communications satellite. Several types of educational programmes are telecast. These include demonstration, enrichment and direct teaching. In the demonstration programmes practical aspects of geography or the experiments can be presented. Geography teaching is immensely facilitated by enrichment programmes. Those facets of geographical topics can be presented which it is difficult for an ordinary school to arrange. These lessons are planned by subject masters who have access to a great range and variety of source materials. Actual portions of the geography syllabus of both elementary and secondary schools, are directly taught through T.V. Through such direct teaching programmes we can utilise the services of experts who are well conversant with the subject content as well as teaching methodology.

Educational programmes are telecast during working hours of a school. A room is to be selected for viewing the programme. The T.V. set is to be placed in such a position that no direct light falls on its screen. Further, it is to be adjusted so as to get the sharpest possible image. The pupils should be grouped in a manner so that all can view the programme with comfort and ease. They can keep their exercise books open and pens or pencils ready for note taking or sketch making. During the telecast they get involved in the lesson and should be left undisturbed. They should participate in the lesson, answer a question if the T.V. teacher asks the same. The educational telecast needs to be evaluated. Here an evaluation sheet containing relevant questions on the topic can be used in the class.

REFERENCES

- 1 Balchin, W. G. V. (1970), *Geography—An Outline For The Intending Student*, Roulledge & Kegan Paul, 28
- 2 Brubacher, John S., (1981), *Modern Philosophies of Education* Tata Mc Graw, 268
- 3 Dale, Edgar (1956) *Audio-Visual Methods in Teaching*, Dryden Press, 3-8, 322-325.
- 4 de Kiffer, R. E. & Cochran, L. W (1952), *Manual of Aaudio-Visual Techniques*, Pentice Hall, 45-50
- 5 Dikshit, Om & Henry, J. T. *Globes and the Teacher of Geography in Geography Teacher*, Madras, May-June 1973, 143-154
- 6 Garnet Olive, (1960), *Fundamentals In School Geography*, G, Harrap, 44
- 7 Gopsill, G. H., (1958), *Teaching of Geography*, Macmillan, 164-165
- 8 Heintzman, O. H & Highsmith, R. M., (1965), *World Regional Geography*, Prentice Hall of India, 367.
- 9 Kaul A.K. (1965), *Teaching Aids in Geography*, E. S. D.

- 10 Kinder, James (1959) *Audio-visual Materials and Techniques*, American Book Co, 40-227
 - 11 Mcknown, H. C. & Roberts, A. B. (1949) *Audio-Visual Aids to Instruction*, Mc Graw Hill, 24-49
 - 12 McKinney, W. M. (1968) *The Globe and its use*, in *Methods of Geog. Instruction*, Blaisdell Pub. co, 37-38
 - 13 Waites, Bryan (1968) *The Use of Maps in the Upper Forms of Secondary Schools* in *Reading in Geographical Education* Whitcombe and Tombs, 170
 - 14 *Report of the working Group on Educational Technology (WGET)* Ministry of Education and Social Welfare, Govt. of India, New Delhi—1971, 1 and 9
 - 15 Wittich, W.R. & Schuller C.F. (1953) *Audio-Visual Materials* Harper Brothers, 91-137, 28-90, 92-96, 158-159.
 - 16 Wooldridge, S. W. & East. W. G. (1958) *The Spirit and Purpose of Geography*, Hutchinson Uni. Lib, 76, 83.
-

HOME GEOGRAPHY

According to James Fairgrieve the function of geography in general and geography teaching in particular, is to train "*the future citizens to imagine accurately the conditions of the great world stage*", so that they are in a position to think intelligently about the problems around them. The study of drama of life is the concern of the historian and a geographer is interested in the study of the stage as well as the present act of the drama. It is not possible to see the entire stage at any one time. There are a number of places, processes and phenomena to be observed in order to obtain a true understanding of the world. In any case the places to be seen outnumber the places that can be seen. The convenient procedure is to see certain places and phenomena and on the basis of what has been observed to imagine things and places which, being distant and remote, cannot be seen. The ability to imagine accurately comes by repeated practice and training in perceiving geographical conditions obtainable in our home area. It is only when we fully understand these conditions that we can, by proceeding from known to unknown, acquire knowledge of the world. Home area or local area constitutes that part of earth's surface where the pupil lives and grows, with which he is in daily contact, where he sees the physical processes at work, where people are living and earning a living. John Gill defines local area as "a meaningful unit to a course of study, close to the school, in which geography is being taught. It is an area which is real both for the pupils and the teacher."

Here a question arises regarding the size of the home area. What should be the extent of the local area? It depends. It is determined by the nature of the locality, whether urban or rural and also by the

age of the pupils. At the elementary stage it can be the school neighbourhood or the area which lies between the home and the school of the pupil. It is within walking distance of the pupil. Here the observations can be carried out during the period meant for geography teaching. In higher primary classes it can be the entire village or a ward in a city. As the children reach the middle and high stage, in a secondary school, the home area expands into a home region and includes a block, tehsil, district and even the province. The region may be studied for half day's on weekends. This will entail the use of motor transport. In high classes the children can afford to be away from their homes for a couple of days.

MEANING

Landscape is the basic source of all geographic knowledge. In order to acquire this knowledge we must know how to study this landscape. The landscape of the home or local area serves as a laboratory for this purpose. It is close to the school. In it geographic facts, concepts and interrelationships can be studied firsthand. Study of the home area is basic to all geographical studies. A study of this type is called home geography. The aim of local geography is to make a comprehensive study of the home area or region by exploration and observation.

Direct observation of the local area is carried out through field studies and excursions. Through such activities wide and varied experiences of the geography of the local region are obtained. A thorough knowledge of the geographical facts and principles is acquired by repeated field work. The direct and firsthand experience of the local area is the scientific and psychological procedure for getting a clear grasp and understanding of its geography.

The geographical knowledge of the home area is also obtained from indirect and secondhand sources. It is collected by the study and observation of its maps, pictures, local newspapers and written records. Talks of the persons interested in local affairs or interviews with them are also helpful in this connection.

Our experience has taught us that in learning geography greater emphasis should be laid on direct and firsthand study. During the exploration and investigation of the local area pupils come into a ctual

contact with the landscape and human activities. Consequently, he is introduced to geographical realities. He receives a thorough grounding in the basic concepts of geography. This understanding of the home area helps him, by gradually proceeding from near to remote and from factual to conceptual, to visualise the different areas of the world, the multiplicity of cultures inhabiting these areas and a wide range of geographical traits and phenomena associated with these areas.

Home geography, therefore, is a planned study, by exploration and observation, under teacher's guidance of the home or local area. Home geography is not an end in itself but a means of acquiring a knowledge of the world. It is an essential and an integral part of geography course. No geography teacher can afford to disregard it. It forms a sound foundation on which the superstructure of geographical knowledge and understanding can be raised. Zoe A. Thralls remarks "Geography is not confined within the walls of a building nor within the cover of a book. Through field work in their community the students gain a realization that all the world and all of man's activities contribute to their education".

The advantages of the study of home geography are many. It tends to make geography a study of real things and something worthwhile. It provides pupils with basic and authentic geographic education. It helps him to realise that there is a close relationship between physical elements and human activities. He learns that the geographic phenomena, both natural and cultural, are dynamic in nature. These undergo change and are in a constant process of development. He finds for himself that man responds in a variety of ways to his natural environment. He observes that certain factors of the environment combine together to give an area a distinct and characteristic individuality or personality. It develops in him a realistic and positive attitude towards the conditions and problems of his area.

In the absence of the study of local area geography teaching becomes lifeless, uninteresting and unrealistic. "In the beginning", writes Gopsill, "geography must be made to live, and children to open their eyes. Otherwise the subject remains but an academic routine and children will go for years without even being aware of the simplest things which are before them". It is to dispel this insularity, to add

some purpose to empty hours, to illuminate world outside, the world of newspaper headlines, of wireless broadcasts and events, that living geography can be of use”.

SIGNIFICANCE

The purpose of the study of home geography is not to stress its importance, but to show to the pupils that geography does not exist only in books and that it can be studied at the door step. How unwise it is to ask pupils to visualize accurately distant lands without giving them a chance to observe their immediate environment or to expect them to understand interaction between man and environment without taking them out to study this interaction in the vicinity of their school or to ask them to find out interrelationships without allowing them to discern these in their home region. No steps should be undertaken to deprive children of the opportunities to get trained in the techniques of observation so that they can explore and discover facts for themselves. “In geography sense of discovery is vital ... because geographical knowledge springs from discovery, from exploration, from finding real things in real place, from going and looking ... It culminates in the art of description, of an interpretative and qualitative kind and description invariably graphic as well as verbal”. The great peculiarity of the local area lies in the fact that geographical material is readily available for study. Its advantage lies in the fact that the teacher can refer to this material which the pupils have studied directly. The significance of local area is given by Tweedie in the following words, “The local area indeed is the geographical laboratory and to ignore it makes the teaching of geography as unrewarding and as sterile as the teaching of physics or chemistry would be without the laboratory experiments to demonstrate principles of study in these two sciences”. Let us discuss the significance of home geography in greater detail in the following pages.

(i) *Trains in Methodology*

Every discipline has its specific methodology and the students must be suitably trained in it. The main features of geographical method are (i) observation of phenomena and collection of data from written records, (ii) recording of observations and processing of the data—in

written form and on maps and graphs, and (iii) interpretation of observations and establishment of relationships.

This procedure is to be put to practical use during the study of home geography. The local region which serves as a geographical laboratory, provides pupils with ample opportunities to get training in geographical methodology.

In addition, pupils make use of number of geographical tools and acquire certain skills. Pupils use simple apparatus for conducting field observations. Map is an important tool of record and interpretation. He gets trained in map reading and map interpretation because during the study of home geography he translates map-symbols into map-language while recording his field observations. The map language becomes intelligible to him by constant use. He also learns about the various primary sources of information and how to collect relevant material from these sources. He learns how to question people to get necessary facts from them. All these steps help him to know how geographical information is collected, classified and compiled and how it finds its way into the text book. Gopsill remarks, "children so trained are learning to *open their eyes*, to see that the neighbourhood will disclose a wealth of interesting matter if only they know how to look for it."

(ii) *Develops Vocabulary*

Every discipline is characterised by its specific vocabulary which gives it precision and definiteness. Geography is no exception to this rule. Since most of the terms in geography are concerned with natural environment no amount of explanation, alone, can make these meaningful for an average learner. They are to be seen to be understood. One reason why geography to some appears to be *difficult* is the inability on their part to translate words into images or concepts due to the absence or lack of meaningful contact with the environment. The environment of a village child is narrow since he has no idea of urban life. Same is true of a city child who has no experience of the rural life. A study of home region broadens his environment by taking him to urban as well as rural areas. By doing so he picks up a large number of words and at the same time these words acquire meaning. Thus through the study of home region a pupil acquires vocabulary of his subject. What

is essential here is not the number of unrelated and incoherent words picked up by him but the amount of meaningful and intelligible terms learnt by him. Under teacher's guidance he learns standard vocabulary, to which he makes a reference every now and then during his class teaching. He understands the teacher's description of an unseen landscape better and at the same time visualises it accurately. In this he is aided by the pictures, maps and diagrams presented in the books or displayed in the class room by the teacher. Acquisition of correct vocabulary by the pupils removes ambiguity and paves way for accuracy both in listening as well as in expression.

It is not surprising to find a person familiar with a term, its meaning and even its definition. He fails to associate it with the actual feature represented by it. A person may be on an island, without knowing that he was on one. Instances of such geographical ignorance are not difficult to seek. The root of this evil lies in lack of connection between the term and the object it stand for. The 'look and say' method commonly recommended in language teaching holds ture here as well. The local region replaces the language primer. "In these elementary observations the pupils have made a beginning in the study of physical geography not *in vacuo* but from living samples in their own neighbourhood. They have taken new words into their geographical vocabulary, not in a sterile list but quite naturally and incidently as the occasion demands them" [Gopsill].

(iii) *Standard of Reference*

All are agreed that in geography, like other subjects, we must proceed from known to unknown. In our case the known area is the home region. In this connection it becomes the focal point of study. In his day to day teaching the teacher has to refer to some facts and figures in order to enliven his geography teaching. The local region becomes a standard of reference for teaching and learning of geography. The intimate knowledge of the home region provides the basis of the experience on which other geographical knowledge can be piled up. It serves as a means of comparison and contrast for the comprehension of the geography of other regions. It again becomes the very basis of comparative method. In the home region the teacher has geographical

material easily available which he can use for the explanation of a major portion of facts, phenomena, concepts or relationships.

Similarly the statistical data given in the textbooks regarding relief, drainage, population and production acquires meaning because he has had an opportunity to know these figures in his study of the home region. The home region serves a yard stick to describe, measure and explain other lands, people and their occupations. It introduces clarity and authenticity in the study of other areas. He knows and understands other areas, on the basis of the experience gained about his home region directly, better inspite of the fact that he is studying them indirectly. The experience he gains regarding part of the world, that is the home region, directly, becomes the basis for the understanding of the rest of the world.

(iv) *Observe Interrelationships*

Home geography provides a direct learning experience to the pupils. In the home region he is observing the relationships that exist between one element of the natural environment with the other and also between the natural environment and the cultural environment. For instance he relates the soil depth to slope and soil type to vegetation and land use. Relationships are also observed between relief and vegetation, relief and climate, climate and vegetation. By finding these relationships he is working out the geography of his local region. On the basis of this experience he can easily understand how the geography of other regions has been attempted.

He also attempts to find out the intercation between man and his environment. He will also investigate how and in what way is his local area distinct and different from other areas. At the same time he tries to visualize the geographical personality of other regions.

(v) *Sense of Reality*

History and geography, in the schools, is, generally, taught by the same teacher and almost in the same manner. The impression that an average pupil gets is that geography like history must be the description of the past, of something that is dead and confined to text books. But when he picks up real good geography at his door step a sense of reality

is introduced into geography content. He realises that geography is concerned with the contemporary and living world. The sequence followed by him is that he observes the natural landscape of his home region and then learns its geography. Afterwards he reads the geography of other places and tries to visualize their landscape correctly. He has seen a river in his home region and he has noticed the fluctuations in the volume of water that flows in it. In lean months it carries little water but at other times the river is in spate and overflows its banks. He will also observe how the water in the river is used for watering agricultural land. With this experience he can imagine River Nile, its annual floods and the prosperity it brings to the flooded fields under various crops. HMT is a very familiar name in our state. It draws its skilled workers from all over the state. The factory has played a vital role in solving, to a certain extent, the unemployment problem of our youth. From radio and other mass media we learn about the annual production of watches from this factory. A visit to the factory will help pupils to understand how factories in other parts of the country are running. This visit will be an eye-opener for them to realise the industrial advancement achieved by us. They can be made to imagine accurately how factories are running and how factory workers are working and producing goods on a mass scale, be it in Japan or West Germany, U.S.S.R or U.S.A. All these observations help him to grow with the feeling that geography is the study of real things—landscapes, human activities and occupations. "Geography is most interesting, most vital, when the realities existing together in the home community are studied", [Jensen].

(vi) *Sympathy and Understanding*

It must be remembered that the understanding, attitudes and skills developed during the study of home geography are a means to realise the aims of education, for which geography, like other subjects, contributes its share. One purpose of education is to help in the making of good citizens who have respect for one another. This respect must be based on a clear understanding of the conditions under which people in different parts of the country or the world live and work. Geography is of sufficient help to us in this sphere. By direct observation in the home region pupils become aware of the fact that in their small locality and

community people are engaged in different occupations and beset with a number of problems. Some of the problems have a direct relationship with the physical environment while others can be attributed to history, and to political and economic conditions. He encounters struggle and efforts made by his people to lessen the effects of the constraints of physical environment. The accurate knowledge, that he has acquired about the interrelationships of geographical elements of his immediate environment, helps him to understand the struggle of man in other environments—countries of the world or states in a country. Two outcomes are expected. In the first instance he will appreciate that some communities living in almost similar environments lead life in different ways. This difference in dissimilar environments is natural and expected. This variety in man's activities can be attributed to his response to environmental conditions, the stage of technological development and to historical factors. This understanding leads to the development of such qualities of the heart as tolerance and sympathy for the people inhabiting other parts of the world.

Secondly, during his field study in the home region, he knows and learns that even the members in a small group or community are interdependent on one another. The more the civilized community is the more is the degree of interdependence. If we extend the area from the province to the state, to the country and to the world we understand that this interdependence becomes all the more significant and indispensable.

Such understanding and sympathy when extended to the people of one's own country results in fostering the qualities of citizenship. Similarly when it encompasses the people of the entire world it encourages and promotes international understanding.

(vii) *Belongingness*

A study and knowledge of the local region helps the child to know that he is part and parcel of a community inhabiting a particular area of earth surface. He belongs to a particular parish, hamlet, village, town or city. This feeling of belongingness is an essential and normal attribute of a well developed individual. This feeling is strengthened by his daily contact with it, his awareness of its problems, and his participation in

all those activities which aim at its well-being and prosperity. An individual gets better understanding of his place in the community and a sense of responsibility for its well-being develops in him. In this way the seeds of citizenship are sown at the grass root level. His insight into the working of his local community is a great help in nurturing his sense of belongingness. "They note what activities are carried on, how they are carried on and why they are carried on where they are and in the ways they are" [Zoe]. Each community, he comes to know, has its unique individuality which is the result of the interaction of man and nature. The importance of local community and its affairs is put forth by James Fairgrieve in these words, "One distrusts an internationalist who is not a nationalist, one distrusts a nationalist who does not also take interest in local affairs".

Use as Method of Study

Home geography can be used as a method of study in a number of ways.

(i) *As an introduction*

When the teacher is confronted with the problem of teaching elements of the geographical environment he should acquaint the pupils with such elements of the local region. He will bring them face to face with concrete and real things. They can later on obtain correct and realistic concepts and understandings based on these experiences. In brief, the first lessons in systematic geography should be taught by actual observations in the home region.

(ii) *Study of a specific place*

It has already been stressed that in home geography children study an area intimately and investigate how the various elements of geography have combined together to give it a distinct personality. This forms the basis of regional concept. The initial lessons in regional geography are also to be conducted in the local region.

(iii) *Methods and Equipment*

All pupils are to be fairly trained in the three pillars of geographical methodology—observation, recording and interpretation. The skills

involved can be learnt when pupils are engaged in the study of home geography. Moving from field to field or shop to shop, with maps open before them, they record their observations on it and interpret their findings after the completion of the given study. During the field work he has to use number of instruments which help in his observations. He has to measure lengths, areas, temperature, volume and similar things. He is given necessary training in the use of this equipment during field trips in the home region. With the use of this relevant equipment he learns how accuracy is introduced in geographical description.

(iv) *Nature of geography*

During the study of home region pupils can be helped to gain insight into the nature of geography. They will see that geography is concerned with the study of natural environment and the changes brought about by man in it to satisfy his needs of living. He is made aware of the changing, or the dynamic, nature of the geographical phenomena. The change is a regular and constant feature of geographical elements. They will further learn that geography establishes a link between the natural sciences and the social sciences.

(v) *General Education*

Study of the home region makes a pupil aware of the problems faced by his community. With this as the basis he easily understands regional problems in other parts of the world. His assessment of the problems is unbiassed and unprejudiced. He listens to radio or witnesses a film and reads a newspaper with understanding and clarity.

Activities Involved

Number of activities can be arranged during the study of home region for achieving its aims. Some of these are :—

1. Preparation of a map of the school neighbourhood showing the route from pupil's home to school.
2. Recording information on a given map—one such exercise in rural and urban area.
3. Recording daily weather by signs, symbols and figures.
4. Interpretation of a given map.

5. Exercises in taking measurements.
6. Collection and labelling specimens of rocks, soils, minerals, vegetation, cereals etc.
7. Preparing sample studies of farms, factories, hydro-electric projects etc.

REFERENCES

1. Biddle, D. S. & Stimson, C. D. J., 1968, *Local Area Studies in School, in Readings in Geographical Education*, Edited by D. S. Biddle, Whitcombe & Tombs, 106-112
2. Briault, E. W. H. & Shave, D. W. 1960 *Geography in and Out of school*, George Harrap, 16
3. Fairgrieve, James, 1930, *Geography In School*, Univ. of London Press,
4. Gill, John, 1963, *The Significance of the Local Area in the Teaching of Geography*, in Readings, 113-116
5. Gopsill, G.H., 1958, *The Teaching of Geography*, MACMILLAN, 24-25, 35
6. Jensen, J. G., 1948, *The Home Community*, 19th year book A, Washington D. C., 176-190
7. Kaul, A. K., 1985, *Home Geography* (A Geography of J. & K.), Ambanju Publications, 1-62
8. Thralls, Zeo A, 1969, *The Teaching of Geography Eurasia*, 143-144
9. Tweedie, A. D., 1968, *The Land Use Map and Local Area Studies*, (in Readings), 127-132

6

CORRELATION

Philosophy is defined as pursuit of knowledge and wisdom. In the early part of human history, particularly during the heydays of Greek and Roman civilisations, knowledge was undivided. It was a common experience to find a particular Greek philosopher pursuing his studies or presenting his views on, what we today call, mathematics, history, science, geography, law, politics, economics, morals, medicine and what not. Herodotus (484—525 B. C.) is claimed to be the founding father of history but his contribution in the field of geography is equally significant. Knowledge then was limited. But as the human culture and civilisation advanced the knowledge and wisdom also expanded considerably. For the sake of expediency it was divided into definite fields or compartments. Today we are passing through a period of knowledge explosion. The emphasis, at present, is on specialisation. Major fields of knowledge have been divided into sub-fields and each sub-field is subjected to further sub-divisions. The acute specialisation is a common feature of the studies at the university level. But here too a reaction has set in. The counter trend aims at breaking down the subject barriers and lays emphasis on interdisciplinary studies.

The division of knowledge into disciplines is arbitrary in the sense that no well-defined boundaries exist between one discipline and the other. In fact they have a common territory where their subject matter even overlaps. It is at the +2 or +3 levels that strict adherence to a particular field is acceptable for here our aim is to produce subject experts. We can afford to teach, and do teach, each subject in isolation or independent of one another.

The situation in the ten year school is entirely different. Here our main concern is the child. The subject matter is presented to him in a manner so that it helps in the development of desirable abilities and attitudes in him and also to an all round and harmonious development of his personality.

WHAT AND HOW OF CORRELATION

Correlation is opposite of teaching school subjects in isolation. A teacher, in a school, can ill-afford to adopt a closed-shop principle nor can he plough his lonely furrow unmindful of what is happening in the neighbouring field. He is to work in co-operation with his teachers to find ways and means to achieve the, above stated, aim of education. Here we feel the need for correlation.

What is meant by correlation? "Correlation, lexically, means 'mutual relationship'. When applied to the field of education it connotes the establishment of mutual relationship between two or more curricular areas so that the treatment of one is of substantial help in the quick understanding of the other". [Kaul - 1977] Through correlation we attempt to break the barriers that separate subjects. In this connection the subject teachers are to plan and pool their efforts to provide the child with wholesome and crisp educational diet in order to achieve the desired outcomes.

How can this be done? At the start of each academic session all the subject teachers of a particular class meet in the staff room and plan their academic schedule for the current session under the guidance of the head of the institution. Here first of all they identify the areas of correlation between one subject and the other. This is followed by a plan of action in which the timing of the teaching of topics of mutual interest is recorded. Strict adherence to this schedule is agreed upon by the teachers. Periodical checks of the execution of the plan of work are to be held. Here the co-operation among the teachers is of utmost importance. Briault and Shave, in this connection, write", The agreement does not need labouring ; co-operation between individuals, among groups of people, and between nations is constantly stressed as a necessary concomitant of progress. It might well find a place in all school staff rooms". As geography, by its nature, serves as a link between natural sciences and social sciences, the responsibilities of a

geography teacher are wide and varied in this regard. He has to make his contribution in the curricular as well as extracurricular activities, be it the class teaching, discussion of current events or the school excursion. Let us see how geography teaching can be correlated with other subjects.

Languages

In the 10+2+3 set up each pupil during his stay in a ten year school has to study three languages. At present, in our state, the languages taught are English, Hindi and Urdu etc. In the textbooks of these languages one section comprises prose lessons and another poems. In either of these sections, be it prose or poetry, some topics have reference or relevance to the field of geography. These can be selected for correlation. The language teacher and the geography teacher make a combined effort in the teaching of such lessons. For example in the English Text Book (NCERT), Book IV, special series, chapters with geographical themes are lessons 7, 9, 10, 11, 12, 13, 15, and 16. Geographical themes are also identified in the lessons of other languages. In each case the right comprehension of the lessons demands the use of a map, drawing of a sketch map and explanation of geographical terms. In this connection the language teacher may have to seek help from the geography teacher. Similarly, in the language class topics with geographical themes are assigned to pupils for composition writing. The language teacher on his part makes sure that in addition to correct language the pupils present authentic and accurate geographical facts. While teaching a poem with the right theme it is to be subjected to geographical analysis to know the locale of its events, the setting, the flora and fauna, the environment and the terrain in which the events take place. Such a procedure will help in the proper appreciation of the poem.

In the geography class, on the other hand, the teacher can bring in relevant prose passages or poems to illustrate certain geographical features or phenomena. There is hardly a theme in geography which cannot be illustrated by a poem. The geography teaching will get enriched in this way. While checking the home assignments of the pupils or during question answer sessions the geography teacher should insist not only on correct geographical facts but also for correct, spoken or written, language.

History

History, civics and geography in the 10+2+3 set up are taught together under the banner of social sciences. History and geography must have something in common by virtue of which they are placed together. Both history and geography have a common object of study. It is the *man*. History is concerned with the study of the drama of mankind, while geography studies the present act of the drama of mankind and the stage on which it is being enacted. The relation between these disciplines has been beautifully presented by Immanuel Kant in the following words. "Description according to time is history, that according to space is geography. History differs from geography only in the consideration of time and area. The former is a report of phenomena that follow one another and has reference to time. The latter is report of phenomena beside each other in space. History is a narrative, geography a description. Geography and history fill up the entire circumference of our perceptions: geography that of space, history that of time". The close relationship of these two fields can be visualised by the fact that every good history book has its first chapter devoted to the study of the geography of that place. Geography helps us in the better understanding of the historical events and developments of that place. Similarly, in every good geography book one chapter, if not the first, deals with its history so that we can know how its present cultural features and composition of population developed in the light of its past events. There are numerous occasions and themes available in these disciplines for correlation.

The story of Civilization vol I and vol II prescribed for classes IX and X deals with topics on pre-history. Bronze Age and other civilizations, Industrial Revolution, Nationalist Movements, World Wars and Struggle for Indian Independence. Use of a map and presenting a geographical backdrop for the development of a particular civilization, or nationalist movement or a war is a must which no history teacher can afford to ignore. Similarly, in a geography class, the role of historical elements in the composition of population, location and progress of manufacturing, site of towns and cities is essential and necessary.

Science

Knowledge in geography is arranged in two ways. That part which studies the environment is called physical geography. While human geography deals with the man aspect of geography. The former has close relationship with natural sciences and the later with social sciences. Topics in physical geography can only be followed when their underlying principles have been made clear to the pupils in the science class. These include elements of weather like air temperature, humidity and precipitation, pressure and winds, their measurement and the changing face of the earth. To understand rock disintegration pupils must be in know of the unequal expansion of water on freezing and solvent action of carbon dioxide dissolved rain water. The construction and working of thermometers, barometers and other instruments is to be taught to them before they take up these topics in geography class. In the biology class he must know the basic facts regarding animal and plant adaptations to their environment.

Ecology and environment have such a predominant role to play in our times that the geography book of IX class is titled *Man and Environment*. In this book due attention is paid to biosphere, man and ecosystem. At the same time *Man and Environment* forms the last chapter of the science text book for the same class. A number of topics in sciences can be explained with the help of geography.

Mathematics

Mathematics plays a vital and significant role in the study of all other subjects. Geography can be no exception. Number of topics in physical geography related to rotation, revolution, latitudes, local and standard time, finding the mean and range of temperature, drawing of production and distribution graphs involve the use of several rules and principles of mathematics. The practical work in geography class is mostly based on mathematical calculations. In a mathematics class authentic data of area and population, agricultural and industrial production can be utilised for solving sumes in arithmetic. Population data can be used for the practice of the rule of compound interest and also for projecting future trends in population.

CURRENT EVENTS

Geography seeks to explain the interaction and interrelationship between man and his environment. People in various parts of the world are trying to establish "workable connections" with the resources of the home region and with the world at large. The connections between man and the earth are constantly changing and taking on new meaning and values. [zoe]. These provide us with the subject matter of current events. Newspapers and other mass media report these changes to us. It is the duty of the geography teacher to select a suitable event analyse it and find geography in it. It can be done both in the class room as well as in the morning assembly. Relevant articles and maps from newspapers and magazines which deal with the current events should be made available to the pupils by displaying these for some days in the *Current Events corner* of the geography room.

Current events help the pupils to know how geography is related to everyday life. They also help to develop a critical and thoughtful attitude among the pupils. They do not merely read a news paper but they read it with understanding. These also help him to develop better understanding of other people. Current events help children to know the developments and the problems of his own country and also of other countries of the world.

We must be careful in the selection of a current event for discussion. It must have a direct relationship with man's activities and natural environment. It must be directly related to the topic under discussion in the class. It should throw more light on the geography of a particular place. It should be connected with developmental activities of a country.

There are certain basic principles which we have to consider while using current events in geography. We should select one current event at one time. The teacher should present the historical background of the event. Its geographical setting should be explained thoroughly and with the help of maps. Children too should be involved in the discussion.

REFERENCES

1. Briault, E. W. H. & Shave D. W. 1960 *Geography In and Out School* George Harrap, 176
 2. Kant, Immanuel, 1775, *Introduction to the lectures on Physical Geography* quoted in the *Nature of Geography* by Richard Hartshorne, Annals, 1958, 135
 3. Raja Ganesan, D., 1879, *The Aesthetic Affective Dimension in the Teaching of Geography* in the *Geography Teacher*, Madras Vol XIV, NOS 1 & 2, 27-31
-

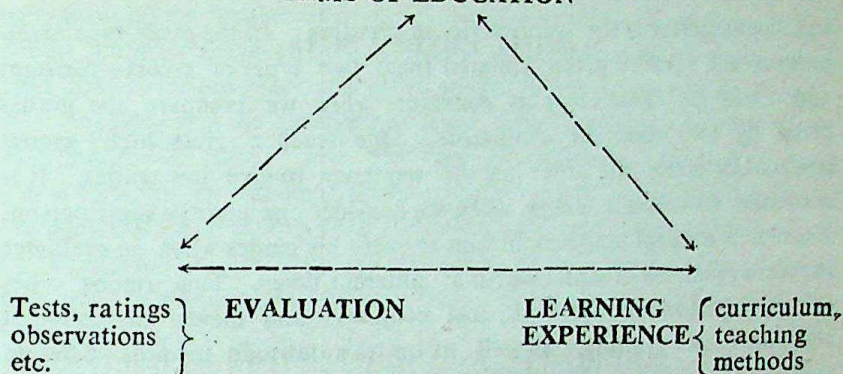
EVALUATION

Hitherto we have discussed the nature of geography, objectives methods and materials of its instruction. With aims defined curriculum formulated and methods selected it is our prerogative to evaluate the outcomes. In other words it is essential and desirable to judge the results of teaching and learning. Evaluation is based on a theory of learning [Brubacher—1981] in which learning is regarded more in the process of reconstruction of experience. "At examination time they took to see whether he has been able to do any thing with them, to see whether he realizes their consistency or inconsistency with other things he knows or whether perchance he has even been capable of improving on them with some originality of his own." Evaluation is the passing of a value judgement on a pupil, a lesson, a course in which in addition to testing we have to consider observations, information about pupils and their records. The diagram given, on page 139, shows the relationship of aims, learning experience and evaluation. According to S. S. Dunn this approach can be applied to the development of attitudes and interests as well as to changes in knowledge, abilities and skills.

Purpose

Evaluation is an integral part of educational process. It is one of the most important means of establishing standards for promotion from one class or grade to another. The other purpose served by it is that of guidance. With the help of general intelligence tests, prognostic tests, diagnostic tests and special aptitude tests and other types of measurement it is possible to find out the field for which a pupil is best suited and naturally inclined. The regular and constant evaluation programme carried out in schools helps children to know the

AIMS OF EDUCATION



growth in their learning from time to time. This is helpful to the teacher and the school as well. In certain situations evaluation serves as an incentive to a greater and well concerted effort on their part to improve their learning achievement.

Forms of Questions

The two forms of questions are the (a) Essay Type Questions, and (b) Objective Type questions. In the essay type questions the examiner provides only the questions and the candidates are expected to attempt their answers. In the objective type, on the other hand, the question as well as answers are given by the examiner. Here the examinee indicates the right answer by rearranging statement or accepting one of the several alternatives or completing incomplete statements etc. etc. In essay type a pupil is required to recall whatever information is relevant to the question. In objective type he has to recognise the correct answer out of a group of alternatives supplied. An examinee, ordinarily, is expected to answer within the framework of the essay type question, yet he has lot of freedom in organising and presenting his answer. Such freedom is absent in an objective type question. Here the correct answer is to be selected as directed. In essay type the scoring suffers from subjectivity. Contrary to it, in the objective type questions the answers are scored objectively. The element of subjectivity is eliminated in them and the scoring is non-personal or objective, hence the name.

The traditional method of testing with emphasis on essay type questions, suffered from a number of inherent defects. The most

significant defect is the subjectivity in grading. In the essay type examinations the grades given suffered from two types of errors—constant and variable. The error is constant when we compare the grades given by two different evaluators. One teacher gives high grades continually while the other has the tendency to give low grades. It is subjected to variable error when we consider one and the same person. There is a natural tendency in him to vary his grades when he evaluates the answer sheets of equal worth at different times. This, among other things, depends upon his physical condition and mental disposition at the time of grading, as well as on this attitude towards different pupils. A number of investigations carried out on this subject reveal that there is a wide variation in the judgement, on the part of teachers, of the answer scripts of essay type tests. As a sequel to this defect of subjectivity in the traditional system new techniques of constructing questions were devised which required objective responses. This could be done by checking, numbering, underlining, matching or filling in a word or a phrase. Here the emphasis is on definite answers. This makes scoring of such questions mechanical and objective. The improved technique of evaluation is called New Type Tests or Objective Type Tests.)

Besides subjectivity, the essay type tests encourage selective study on the part of the students. In the university or board examination he is expected to attempt five questions within the given time. Out of ten or more topics in a given subject he can afford to study five or six topics only and discard the rest. He takes chances and in most of the cases gets a pass. But essay type tests have their plus points as well. In the first instance, through them, we appraise knowledge and understanding of the students. In addition we know his overall mastery of the subject, how he interprets ideas and expresses his opinions, discusses principles and points of view, organises factual knowledge and how convincingly he presents his arguments. The other traits that get surfaced while attempting an answer to an essay type question pertain to his language abilities. These are neatness, correct usage and spellings, paragraph unity, choice of words and in brief his command over the language.

The new type tests, besides objectivity in scoring, have a number of advantages. It is more comprehensive than the essay type test because it is possible to give a large number of questions within the same time.

“Any test is a mere sampling, and the pupil's chance for finding in the range of questions those which represent samples of his knowledge increase with the number of items. The larger number of items in a test makes it more reliable. [Bining & Bining]. The large number of test items help us to cover the entire courses of study. These economise the pupil's effort in answering the questions because their mechanics is reduced to minimum. The teacher also has ease in evaluating the test scripts. These tests are not without their disadvantages. In these tests students do not get a chance to express their opinions nor can they organise their ideas convincingly. His language abilities pass unnoticed. Most of these tests must be presented in a written form. Conducting such tests orally presents difficulty.

New type tests can be divided into standardised and informal types. The former are constructed by investigators and researchers while the latter are constructed by teachers. Teacher made informal objective type tests are (i) short answer, (ii) matching form, (iii) multiple choice (iv) completion type and (v) true and false type. Let us present each test with suitable examples.

ESSAY TYPE QUESTIONS

(A) Long Answer Type

These questions are characterised by such operative instructional phrases as *discuss, explain, compare and contrast, account for, show how* etc. These are the questions commonly set on the internal or external examinations of schools and colleges. It is quite easy for the examiner to construct such questions. They are popular because these can be prepared in a short time and without much effort. Their wording does not need much thinking on the part of the paper setter. Sometimes they are prepared in a haste and suffer from ambiguity and vagueness. Some of the ills of the present system of examination are traceable in and attributed to these defective type of questions. If properly worded and well thought out these questions can be used for a number of reasons as illustrated below :—

(a) Selective recall of geographical information

Q. How are Monsoon winds formation? In what part of the world are they found.

(b) Comparison and contrast.

Q. How does Japan compare with Great Britain in respect of location, relief, climate and industries?

(C) Establishment of relationships.

Q. What conditions are necessary for growing rice?

(d) Classification of geographical facts.

Q. What are the various types of rocks? Classify the following rocks:—granite, sandstone, coal, slate, shale, clay, gneiss, marble, limestone.

(e) Explanation of geographical principles.

Q. How does the North Atlantic Drift influence the climate of Northwestern Europe?

Examples

- Define latitudes and longitudes. Bring out the distinction between the two with the help of neat diagrams.
- Describe the three realms of the earth. What is the significance of each realm to man?
- Explain the work of a river as an agent of gradation at each of the three stages of its course.
- What do you mean by natural resources? Why and how should natural resources be conserved?
- Account for the low summer rainfall in Tamilnadu?

The subjectivity in scoring long answer questions can be reduced considerably by adopting the following procedure. The examiner at the time of setting of a question paper will also prepare a set of instructions for scoring. It comprises a brief outline of the answers expected from the examinees and guidelines for assigning marks. The answers need to be assessed strictly in accordance with these instructions.

(B) Short Answer Questions

In this type of questions also the answer is to be given by the examinee but the answer is to be given in one word, a few words or a sentence or in the blank space meant for the same. The questions are

thought provoking and to the point. The scoring of these answers takes less time and it is more or less objective. The other significant advantage of these questions is that more questions of this type can be asked within the same time limit. This will help in covering a greater number of topics prescribed for a particular examination.

Examples

1. What is the name of the parallel of latitude equidistant from the poles ?
(One word)
2. What is the date of summer solstice in the northern hemisphere ?
(few words)
3. Distinguish between a U-shaped and V-shaped valley.
(one sentence)
4. How is an artesian well formed ?
(few sentences)
5. Why is that people in Britain and Australia celebrate Christmas in different seasons ?
(Specified space)

OBJECTIVE TYPE QUESTIONS

(a) Matching type

In a test of this type a number of complementary statements are arranged in two columns in a haphazard manner. The pupil is expected to re-arrange the statements given in one column to match with corresponding statements in the second column. Matching type tests are generally used for measuring recognition and recall.

Examples :

- (a) Match the major rivers and deserts of Africa given in col. A with their names given in column B.

Col. A	Col. B
(i) The river which flows into the Indian Ocean	Sahara
(ii) The river which flows into the Mediterranean Sea	Kalahari

- | <i>Col. A</i> | <i>Col. B</i> |
|---|---------------|
| (iii) The river which flows into the Atlantic Ocean | Zambezi |
| (iv) The northern desert | Congo |
| (v) The southern desert | Nile |
- (b) Make out correct pairs from two columns regarding Arab Republic of Egypt.
- | | |
|-------------------------------|-----------|
| (i) Capital city | Cotton |
| (ii) Dam on the Nile | Petroleum |
| (iii) Important cash crop | Cairo |
| (iv) Important mineral wealth | Aswan |
- (c) Match the canals of J & K given in Col. I with their source rivers given in Col. II.

Col. I	Col. II
(i) Ranbir Canal	The Madhumati
(ii) Martand Canal	The Ravi
(iii) Kathua Canal	The Sind
(iv) Zainagir Canal	The Chenab
(v) Shah Kohl	The Lidder

(b) Multiple Choice Type

This is used to test the understanding of geographical relationships. Some sort of discriminative thinking on the part of pupils is required in this versatile test. In this test a statement or a question is provided with a number of (at least four) answers or choices. He is to select the correct choice.

Examples :

Tick the correct answer

- (a) Which one of the following coasts has the largest coconut plantation in India.

- | | |
|----------------------|--------------------------|
| (i) Coromandal | <input type="checkbox"/> |
| (ii) Sunderbans | <input type="checkbox"/> |
| (iii) Konkan | <input type="checkbox"/> |
| (iv) Northern Sircar | <input type="checkbox"/> |
| (v) Malabar | <input type="checkbox"/> |

(b) The $23\frac{1}{2}^{\circ}\text{S}$ latitude is also known as

- (i) Equator ☐
- (ii) Tropic of Cancer ☐
- (iii) Tropic of Capricorn ☐
- (iv) Arctic Circle ☐
- (v) Antaractic Circle ☐

(c) Hydro-electricity generated in the Lower Jhelum (Sheri) Hydel Project is :—

- (i) 9 MW ☐
- (ii) 15 MW ☐
- (iii) 225 MW ☐
- (iv) 105 MW ☐

(c) Completion Type

In this type of test an incomplete statement is to be provided with a term or place name in order to complete it.

Examples :

Complete the following statements.

- (a) New Zealand is an island country like-----.
- (b) The four main islands of Japan are-----, Honshu,----- and-----.
- (c) -----consists of two main islands; North Island and South Island.

(d) True and False Type

In this test a number of statements are given and the pupil has to indicate which is true (by T or \checkmark) and which is false (by F or X). It is used in order to test both knowledge and understanding.

Examples :

Write T against true and F against false statements given below :—

- (a) One rotation of the earth takes 24 hours ()
- (b) Isotherms² join places of equal rainfall ()

- (c) Ladakh is the densely populated region of J & K state ()
 (d) Dul-Hasti Hydro-electric Power Project will be constructed on River Chenab ()

In the question papers set for internal or external examinations all types of tests given above should be included. This shall be a significant step towards examination reform.

SCORING KEY

Page 143 Matching Type

- | | | |
|-----------------|--------------|--------------|
| (a) (i) Zambezi | (ii) Nile | (iii) Congo |
| (iv) Sahara | (v) Kalahari | |
| (b) (i) Cairo | (ii) Aswan | (iii) Cotton |
| (iv) Petroleum | | |
| (c) (i) Chenab | (ii) Lidder | (iii) Ravi |
| (iv) Madhumati | (v) Sindh | |

Page 144 Multiple Choice Type

- (a) ——— (v) Malabar
 (b) ——— (iii) Tropic of Capricorn
 (c) ——— (iv) 105 MW

Page 145 Completion Type

- (a) Japan
 (b) Hokkaido, ———, Kyushu, Shikoku
 (c) New Zealand

Page 145 True and False Type

- (a) ——— T
 (b) ——— F
 (c) ——— F
 (d) ——— T

REFERENCES

1. Binning A.C. & Binning H.D. 1952, *Teaching the Social Studies in Secondary Schools*, Mc Graw-Hill, 294-301.
 2. Brubacher, John S. 1981, *Modern Philosophies of Education*, Tata Mc Graw, 268-276.
 3. Cox, B. 1968, *Test Items in Geography for a Taxonomy of Educational Objectives*, in readings in Geog. Education, edited by D.S. Biddle, Whitcombe and Tombs, 249-264.
 4. Dunn, S.S. *Evaluation in Geography*, in Readings.....245-248.
 5. N.C.E.R.T. 1962, *Improving Evaluation, Specimen Unit Tests* Vol. I.
 6. N.C.E.R.T. 1980, *Sample Unit Tests in Geography*.
-

LESSON PLANNING

You have, so far, in the previous chapters, studied various theoretical aspects of geography teaching. But in teaching, like other professions, theory and practice go hand in hand and are almost inseparable. We are aware of the importance of internship and practical training for medical and engineering graduates who can not enter their respective professions without it. Of similar significance is practice of teaching for teacher graduates. During the practice of teaching programme the student-teachers are sent to secondary schools where under the guidance of a supervisor they have to deliver a specified number of lessons in the teaching subjects offered by them. Out of the total marks meant for B. Ed. Course one third is reserved for practice of teaching.

The lessons to be delivered by a student-teacher need to be planned, in advance. There is no reason to grumble or shudder at the idea of planning a lesson for planning has become an integral part of modern times. Who does not plan his work? Doesn't a surgeon, after the diagnosis of the ailment of a patient plan for the operation before the patient undergoes surgery? Doesn't a lawyer prepare his case thoroughly before he presents himself in a court? Doesn't an engineer prepare a blue print of jobs to be executed? Why should not a teacher also prepare a plan of his work in advance?

Advantages

In the process of education of a child the teaching on the part of the teacher is as significant as the learning on the part of the pupils. The teacher knows the learning material that he

has to present to a class. He also knows the various method of teaching. He has to select a method that is quite helpful in the teaching-learning of the given subject-matter. He finds and collects appropriate teaching aids. He anticipates the question asked and the clarifications sought by the pupils for he knows their mental abilities, their psychology of learning and growth. On the basis of these and other considerations he plans his day's lesson.

Planning of the lesson helps him to restrict himself to the objective that he has set up for that lesson. There are no chances for him to go astray. He has charted a course for himself which he endeavours to follow strictly. The aim of the lesson is known to the pupils, as well, so they too limit themselves to the path shown by the teacher. Lesson planning makes teaching systematic and orderly. There is wastage neither of time nor of effort. With a well prepared plan, organised subject matter and carefully selected aids the teacher faces the class with confidence. He teaches it so well and with such effort that there is maximal learning on the part of the pupils.

Some Considerations

A student-teacher while planning his lesson has to bear certain facts in view. These, if and when, considered will lead to successful teaching.

He should carefully weigh the learning material that he is going to present in his class within the given time. The guiding principle should be to avoid "too many things". Too many details, do not go in his favour. The material presented must from a comprehensible unit.

The lesson should be illustrated by sketches, charts and diagrams. But at the same time the teaching aids should be carefully selected and wisely used.

The lesson should not be presented in isolation. It must be linked with their earlier lessons and while presenting it care should be taken to make it the basis for future lessons.

Sufficient thought should be given to the formulation of questions. Questions can be asked at every step in a lesson but for different purposes. In the introduction they can be asked to link the new know-

ledge to be gained with the knowledge already gained by them. In the presentation the questions are asked for helping in the development of the lesson. In the last stage questions are asked for evaluation and recapitulation. But we have to be careful about the wording of the questions. Certain types of questions, like the echo, omnibus, elliptic, leading and alternative, as far as possible, should be avoided. The questions should be short, simple and direct.

While presenting the lesson possibilities should be explored for comparing different spatial units. In this connection latest data available on home geography like distances, area, population production and climate may be used.

Efforts should also be made to link the present subject matter with other subjects in the school curriculum. Correlation of geography should be resorted to with other subjects to whatever extent possible.

Special Features of a Geography Lesson

Geography lesson has certain specific characteristics which easily differentiates it from lessons of other subjects.

The subject-matter in geography should be presented in a clear manner so that pupils are apprised of the dominant theme of the lesson. Through it he learns the concepts and principles of geography and gets deeper insights and basic experiences of the subject. "Foremost is the experience that everything in the world happens within the two dimension of time and space. Of these two dimensions, geography is concerned with the latter; as a subject, it provides the tools, means and concepts by which the pupil may find his way in the space called earth". [Ludwig Bauer].

He must realise, through geography lessons, that every landscape is a complex structure both in appearance and function. All the natural phenomena on the earth are guided by natural laws. In geography we study the causal and structural phenomena of nature. These are measured precisely. The cultural or man-made features do not conform to natural laws. These are an expression of free creative will of man. These are directed by his purposes and motives. Man as a thinking animal has great and serious responsibilities towards his habitat—the

In planning a lesson in geography our objectives of teaching, learning-material, types of questions and aids must be related to the age-group of the class, the mental capacity and psychological make up of the pupils. The methodology that is adopted in elementary, middle and high classes should be quite different from one another. But "An essential formal aim of teaching can be used in every lesson namely, the practice of reproducing the world's concrete reality with the aid of words, figures, drawings and graphical descriptions". [Ludwig Bauer].

Lesson Plan

Johann Friedrich Herbart (1776-1851), a German philosopher, through his writings had a profound influence on educational theory and philosophy. His greatest contribution has been the five formal Herbartian steps, which approach the problem of education from the viewpoint of the teacher. Herbartian ideas were put into practice at Jena, in Germany, by Ziller and Rein. Soon his ideas spread all over the world and they continue to be in use in this part of the world.

The lessons used to be planned on five formal Herbartian steps, which are *preparation, presentation, association, generalisation and application*. There have been many attempts to modify this procedure. In this connection a simple format of lesson planning was evolved in this college in 1970. It consists of the following steps.

- (A) MARGINAL INFORMATION
- (B) OBJECTIVES
- (C) TEACHING AIDS
- (D) PROCEDURE

(a) *Introduction*

(b) *Presentation*

- (E) EVALUATION

(A) *Marginal Information*

This includes the name of the class, topic, subject, duration and other relevant information.

(B) *Objectives*

While teaching a particular lesson in the class we have at least two objectives in view, though there may be many more. One of the object-

ives is related to the discipline. What are the objectives that we want to achieve while teaching geography in the school? These may be :—

- (i) To study the earth as the home of man.
- (ii) To study the interaction between man and his environment,
- (iii) To study the areal differentiation of the earth.
- (iv) To study the sailient features of the natural environment and find out relationships.
- (v) To foster and promote intelligent citizenship among our pupils.
- (vi) To develop among pupils attitudes of sympathy and tolerance towards other people of the world and to foster international understanding..

The second objective pertains to the teaching of the particular topic in geography. It may vary from day to day.

- (i) To help pupils to know the physicat features of Australia.
- (ii) To familiarise the pupils with parallels of latitude and temperature zones of the earth.
- (iii) To acquaint the pupils with the development of Iron and Steel Industry in India.
- (iv) To help pupils to know action of running water as an agent of gradation.

(C) Teaching Aids

The minimum aids which we expect in a school are a black or chalkboard, pieces of chalk, eraser and a pointer. It is pointless to mention these under the title teaching aids. For teaching aids we should record maps—whether printed or hand made, special purpose or black board outline roll up maps—objects, specimens, globe and the like. Geography teaching demands a wide and regular use of teaching aids. Special purpose and hand made aids are given preference.

(D) Procedure

(i) Introduction

The class needs to be prepared for the new lesson. It can easily be done by tapping the previous knowledge of the pupils by asking suitable

questions. The number of questions should vary from three to five. All questions should be formulated in simple language and must have short answers.

Another procedure, tried out by the present writer with success, is suggested for the introduction of the lesson. It utilises pupil's faculty of observation and reporting. A visual aid relevant to the topic, be it a globe, a map or a chart, is displayed in the class by the teacher. He asks a series of questions, in a systematic order, with reference to this visual aid. The pupil come close to the displayed aid in order to find a answer to the question asked by the teacher through its observation. The teacher gradually directs their attention towards the present topic.

(ii) Presentation

This comprises the lesson proper—the learning material that is to be presented on a particular day. It needs to be arranged in logical order. The questions asked, comparisons to be made, aids to be used should be indicated at their appropriate places. This step should take most of the time. Here the teacher's exposition, mastery of the subject matter, class management, capacity to involve pupils, and other teaching abilities are subjected to a test.

(E) Evaluation

The two purposes served by this step are to recapitulate or revise the lesson and to test the comprehension of the class. Here a series of questions are asked and their answers elicited from the class. The first part of the evaluation consists of four to seven short answer type questions. This may be followed by two objective type tests preferably matching and multiple choice tests. An exercise in map filling may also be given at this stage if the lesson so demands. It is advisable to write all the objective type questions, in a bold legible hand, on a spare black board, before the commencement of the lesson. It should be exposed at the proper time.

LESSON PLAN NO I

Class.....IX
Subject.....Geography
Topic.....Insolation
Time.....40 minutes

Objectives

- (i) To familiarise the pupils with their natural environment.
- (ii) To help them to know the heat budget of the earth.
- (iii) To acquaint them with Insolation and Terrestrial Radiation.

Teaching Aids

- (i) Hand made charts showing
 - (a) break up of insolation
 - (b) details of earth radiation

Procedure

(i) Introduction

The teacher will introduce the lesson by asking following questions :—

Q. 1. Name the star round which planets in the Solar System move ?

E.A. The Sun,

Q. 2. In what way is the sun useful to us ?

E.A. It gives us heat and light.

Q. 3. What is the surface temperature of the sun ?

E.A. 6000°C

Q. 4. What causes the production of huge quantities of energy on the sun ?

It is a nuclear reaction which converts hydrogen into helium.

Q. 5. In what form does solar energy reach the earth ?

E.A. It travels in the form of solar radiation.

The teacher will now tell the 'class,' Today we will study the solar radiation and terrestrial radiation." He will write the topics on the B.B.

(ii) Presentation

The teacher will explain the topic by giving a detailed account of the amount of heat received by the earth by making use of the given charts. He will note down the details on the black board.

(a) What is meant by Insolation ?

The solar radiation reaching the earth is called insolation. It is the abbreviated term for INcoming SOLAR radIATION.

(b) It is received in the form of short waves.**(c) Let us presume that 100 parts of solar radiation travel towards the earth. Before reaching the surface of the earth, it has to pass through the atmosphere. Let us see what happens to it.**

(i) Reflected by the gases present in the atmosphere	6%
(ii) Reflected by the clouds	27%
(iii) Reflected by snow fields and oceans	2%
(iv) Total amount of insolation reflected or lost into space	35%
(v) Amount of insolation absorbed by the water vapour, ozone and other gases.	14*%
(vi) Amount of insolation that is absorbed by the earth	$100 - [6 + 27 + 2 + 41]$ $= 51\%$

From the above table it is evident that only 51% of the total insolation reaches the earth surface and heats up land masses and water bodies.

(d) What is meant by terrestrial radiation and how is it caused ?

The insolation reaching the earth's surface heats it up. The earth now behaves like a radiating body. It radiates energy in the form of long waves, into the space. It is called terrestrial radiation.

(e) As the outgoing radiation is less powerful than the insolation it is readily absorbed by the atmosphere.

(iv) Total insolation that reaches the earth	51%
(vii) Terrestrial radiation lost into space	17%

- (viii) Absorbed by the water vapour and carbon dioxide present in lower layers 34%
- (ix) Total absorbed by the atmosphere 14% + 34%
sum of v and viii or 48%

Thus the atmosphere gets heated more by terrestrial radiation than by insolation,

Evaluation

In order to revise the day's lesson and to test the comprehension of the class the following questions shall be asked :

- (1) What do you mean by insolation ?
- (2) What is the nature of incoming radiation ?
- (3) What amount of insolation is reflected into space ?
- (4) How much insolation reaches the earth's surface ?
- (5) What is meant by terrestrial radiation ?
- (6) What is the total amount of energy absorbed by the atmosphere ?
- (7) Match the statements given in col I with their corresponding values given in Col II

Col I	Col II
(a) Total insolation reflected into space	17%
(b) Total absorbed by the atmosphere	51%
(c) Insolation that reaches surface of the earth	35%
(d) Terrestrial Radiation lost into space	48%

- (8) Complete the following statement : Insolation stands for
_____ solar _____

LESSON PLAN NO 2

Class ... VI
Subject ... Geography
Topic ... Nigeria
(Land and Climate)

Time 30 min

Objective

- (i) To study the earth as the home of man.
- (ii) To acquaint the pupils with the land and climate of Nigeria, the land of palm oil and cocoa.

Teaching Aids

- (i) A printed and coloured political map of Africa.
- (ii) A hand made physical map of Nigeria.

Procedure

(i) Introduction

The teacher will prepare the class for today's lesson by asking following questions. They have already studied geography of Zaire and Tanzania in the preceding chapter.

Q. 1. Where in Africa is Zaire situated ?

E.A. Zaire is situated in Equatorial Africa.

Q. 2. Which is the main river of Zaire ?

E.A. River Congo (or Zaire)

Q. 3. Name two cash crops of Zaire.

E.A. Cotton and palm oil

Q. 4. Name some countries of Africa which lie to the north-west of Zaire.

E.A. Cameroon, Nigeria and Ghana.

"Today we will study land and climate of Nigeria."

(ii) Presentation

The teacher will display the political map of Africa to indicate the location and size of Nigeria. He will then use the physical map of Nigeria for explaining its relief features and climate.

Location : Nigeria is an important country of West Africa, not far from equator.

Land : The land surface of Nigeria consists of :—

- (a) Coastal lowlands : These lie in the south, facing the Gulf of Guinea. These have an undulating surface and are covered with rain forest
- (b) Central Plateau : To the north of coastal lowlands lies the plateau of Jos. Here the vegetation comprises grasslands.
- (c) Sahara Desert : The north of the country reaches the Sahara desert.

The Niger is the most important river. It drains the greater part of the country and finally enters the Gulf of Guinea.

The rivers in the north fall into Lake Chad.

Climate : Coastal Nigeria has equatorial type of climate and has rainfall throughout the year.

In the interior there is a marked dry season in summer. Hot dust laden winds often blow from the north in this season.

Evaluation

The pupils shall be asked to answer the following questions :—

1. Where in Africa is Nigeria, situated ?
2. Into how many parts is the land surface of Nigeria divided ?
3. What is the nature of land surface in coastal low lands ?
4. What type of vegetation is found on the plateau of Jos ?
5. Which is the most important river of Nigeria ?
6. What type of climate is found in Nigeria.
7. Tick the correct answer :-

River Niger falls into

- (i) Lake Chad
- (ii) Mediterranean Sea
- (iii) Red Sea
- (iv) Gulf of Guinea

8. Complete the following statements :

The coastal lowlands of Nigeria are covered by _____, while in _____ the vegetation consists of grass.

Page No. :- 156 **LESSON PLAN NO. 1**

Q. No. :-7 (a) 35% (b) 48% (c) 51% (d) 17%

Q. No. :-8 Insolation stands for *incoming solar radiation*.

LESSON PLAN NO. 2

Page 158 Q. No 7 (iv) Gulf of Guinea

Q. No 8 Tropical rainforest, Central Plateau

REFERENCES

1. Bauer, Dr Ludwig, 1976, *The Géography Lesson*, in EDUCATION, published by Institute For Scientific cooperation, Federal Republic of Germany.
 2. N. C. E. R. T. *Man and Environment*, Textbook for class IX.
 3. N.C.E.R.T., *Lands and People*, Part I Textbook for class VI.
 4. Rania, Gopi Nath *The Evaluation and Improvement of a Lesson ESD*, Teacher's Training College, Srinagar.
-

The term curriculum is derived from a Latin word which means 'runway'. It is the course which a person in a race runs in order to reach his goal. The term has been adopted in the field of education where it stands for the ground teacher and pupil has to cover in order to achieve the objectives of education. According to Brubacher the relation between the aims of education and curriculum is so close "that curriculum is nothing more than aims or values writ large in expanded form."

ATTRIBUTES

The two fundamental factors in the process of education are the learner and learning materials or simply the pupil and the curriculum. Those things that we want a child to learn in the school constitutes his curriculum. The number of things which a child learns in the school is as significant as those he learns outside it. But what he learns in the school influences his learning outside it. For example, if a child has developed, in school, taste for reading he will make a right choice of the reading material available outside the school. On the other hand a child who hates his text books, as being dull, difficult and uninteresting, shuns any reading material outside the school. His school experiences pave way for learning. In the school he finds himself in different situations where he acquires skills, understanding and attitudes. The school experiences in the form of things seen, heard or done, provide the basis for learning. Learning, therefore, is a result of variety of experiences provided by the school and to which he stands constantly exposed. What he learns in the school has definite impact on his outside school experiences. To put it differently his experiences outside

the school are related to those which take place inside the school. Saylor and Alexander remark, "School curriculum is the total effort of the school to bring about desired outcomes in school and out of school situations. In short, the curriculum is the school's program for learners".

Curriculum is commonly thought as a list of subjects for a particular class or school. In that case curriculum excludes all those experiences of the pupil, called activities, which take place in a school but outside his classroom. It is advisable to call such a list of subjects and their contents as '*a course of study*' or '*a syllabus*'. The activities arranged, outside the classroom, in the school playground, assembly, auditorium, library, museum, school neighbourhood or far off places are referred to as *extra-curricular* or *co-curricular* activities. These activities include his participation in clubs, sports, games, projects, debates, and symposia, excursions, publications, community surveys, dramas and social service. All these activities are an essential feature of a school programme. These activities are as significant, from child's development point of view, as teaching-learning of subject content. Through these activities child gets ample opportunities to surface his hidden talents, for his right flowering and for social experiencing. Curriculum includes both content as well as activities. All these are designed in a manner to favour learning. Pupils learn by studying content and by participation in school activities. The learning experiences that take place in a school include, among other things, reading, writing, seeing, listening, talking, creating, playing, practicing and problem solving.

The next thing that one likes to know is what should be included in the curriculum. We know that curriculum helps us in the acquisition of social objectives or goals. In this context curriculum should be considered as a means rather than an end. It is expected to lead to desired and desirable outcomes. Here we have on one side the wishes of the society and on the other the capacities of the child. The primary function of curriculum is the preservation and transmission of our cultural heritage. This forms the basic element of our curriculum. At the same time the contemporary developments of the society, the social transformation, in which the child finds himself, also provide important elements of school curriculum. Both these elements assume the form of knowledge, facts, skills, attitudes, beliefs and techniques. But what and how much of these elements should be selected and incorporated in the

school curriculum depends entirely on the interests, needs, capacities and the mental level of the pupils. Here the rule of the thumb is to see that the race-experience matches with the child experience. The curriculum must take cognizance of the findings of the researches and experimentation carried out in education.

Curriculum is to be considered as a *process* rather than a *product* as it keeps growing, developing and evolving. As rapid changes are taking place at present all those things which have become redundant and outdated are to be dropped.

Those things which have become significant and integral part of the society in which a school functions are to be added. Curriculum should be considered as a changing procedure which can be made and re-made. The curriculum also has to be flexible.

Who is to change and make the curriculum? The teacher. It is he who has to select, grade and arrange the contents of the curriculum. It is he who bridges the gulf between the demands of the society and capacities of the pupils.

PRINCIPLES

Geography is an academic discipline and an element of culture. It deals with the spatial dimension of social phenomena. Geography, in the schools, provides useful knowledge which helps an individual in comprehending the world he lives in. He understands the interdependence of nations of the world and the need for international understanding. It prepares a child for citizenship, for a vocation and for the right use of leisure. The subject matter of geography is full of meaning for the pupils. It is contemporary and realistic. Geography provides children with situations in the classroom or during the field studies, where they can learn. As geography deals with the objective reality it captures their imagination and arouses curiosity. Through field work and observations he is able to witness the facts, phenomena and processes at work in his local area. In short, it makes a sound and useful contribution to the general education of the pupils.

The principles on which a geography curriculum can be planned are given below (Gopsill). These are in addition to the general principles of curriculum construction pertaining to the pupil, the society and the learning process.

(i) *Aims of Teaching Geography* : In the planning of geography curriculum the basic principle to be considered is the aim or aims of teaching geography. Should the geography course provide useful knowledge or help in intellectual development ? Should it foster genuine local patriotism or international understanding ? Once we have agreed on the aim or aims of teaching geography it is easy to plan its syllabus. With the goal or the objective set we can chart a content course achieving desired outcomes. In a situation like this we shall be putting philosophy into practice. In Indian context we must lay more stress on the development of intelligent citizenship among our pupils. In a geography course of India special care is to be taken to show the interdependence and complimentary nature of the various states and union territories of our country. We shall have to endeavour through a geography course for the national unity and to combat fissiparous tendencies which are working in the opposite direction. [Refer chapter 1, Pages 2 to 10].

(ii) *Study of the World* : The object of study of geography is the world—the human habitat. So a course of geography must include the study of the world. The curriculum in geography is planned in a manner so that a pupil coming out of a secondary school has a thorough knowledge and sound understanding of the geography of his home region, home-land, and also a broad perspective of the world. The curriculum is planned in a manner so that the world geography is presented in every stage of schooling—primary, middle and secondary. Not all parts and countries of the world need to be included in the geography syllabus. We can be selective in the choice of the countries and include only those with which the child's home country has strong political, cultural and economic relations. The world can also be studied continentwise and from each continent a few specimen countries selected. The world can also be presented through the study of natural regions. At the end of the course the pupils must understand the significance of interdependence of the communities and nations of the world.

A formal geography course begins in the class III where the child is introduced to his home region or state. In class IV he studies the home land and in class V he studies the world through sample or regional studies. If a pupil drops out of the primary school he has obtained some knowledge of the world. In classes VI to VIII the world is presented through the study of continents. If he drops out of the school

at the end of middle stage he has already acquired a wider view and understanding of the world geography. In class IX he studies world through natural regions.

(iii) *Graded Syllabus* : Topics in geography vary in their difficulty value. Some of these are simple while others are difficult. Some topics are complex as well. The syllabus in geography should be properly graded. The topics are to be arranged in an ascending order of difficulty. Psychological factors are to be considered while arranging the topics. At the same time general principles of teaching should also be taken into consideration. Difficult and complex topics are to be avoided in the early classes. At a particular stage only that subject matter can be selected what the children at that stage can easily understand. The geography content should be appropriate to pupils stage of growth and development. In the earlier years the approach should be descriptive but at a latter stage it can be explanatory.

(iv) *Unified Field* : There are various aspects of geography like the physical, human, regional, systematic, mathematical, economic and the like. Geography syllabus should not be a hotch potch of these aspects of geography arranged in separate and distinct sections. Such a fragmentary arrangement defeats the very nature of geography which is regarded as unifying science and integrating field. These aspects should be in close relationship with one another. The syllabus should be a homogenous blend of these aspects. It was a custom to divide the content in geography into separate sections and teach it separately. The practice needs to be discarded as the planning of the syllabus on these lines presents the knowledge in pieces and this fragmentation is educationally unsound. Various aspects of geography should be presented together in the study of a region or a topic as the same is in accordance with the nature of geography and modern educational practices.

(v) *Relationship with other Subjects* : While planning geography syllabus it is obligatory on our part to consult and examine the syllabus of other school subjects. Experts of geography shall have to work in collaboration with other subject experts. The step is to be taken in view of the fact that a geographical background is essential for the proper teaching of certain topics in languages, mathematics, history and sciences.

In the geography syllabus the topics are to be arranged in a manner so as to provide a suitable geographical setting to the topics presented in the above stated subjects.

Conversely, certain geographical topics should be introduced only when the teacher is sure that pupils have sufficient supporting knowledge to understand what they are going to do. For example map work in geography syllabus can be taken up in a particular class when the teacher is sure that children have sufficient understanding and practice in the measurement of distances and angles and properties of triangles in the mathematics class. They can likewise understand the causes of winds when in science class they have been taught heat, temperature and pressure. A geography teacher should know what teachers in other disciplines are doing. One who plans the syllabus must know how the content of other subjects is going to help a pupil in understanding facts, phenomena and processes in geography. Geography, particularly physical geography, has sufficient common ground with other subjects like physics, chemistry, botany and mathematics.

[Refer chapter 6, Correlation]

(vi) *Study of Homeland*: The syllabus should be planned in a manner so that we begin with the geography of home region or local area, then proceed to homeland or home country and finally present the geography of the world. In this way we begin with what can be observed first hand in the home area. Then working outwards the horizons of geographical studies keep on widening. The home region or homeland should appear twice in a secondary school geography course; first at the beginning of the course and again preferably at the end of the course. In the beginning it will serve as a stepping stone, an introduction, to geographical method and world geography. At the end when world geography has been comprehended, it is studied against world setting. The main reason for this is that we cannot know the world till we know the homeland for we have nothing to measure it. Conversely, we cannot really know the homeland till we know the world because we have nothing with which to compare it.

[Consult chapter 5, Home Geography]

(vii) *Map-Work*: Map as an essential and fundamental tool for teaching and learning geography stands explained in Chapter 4. Provision must be made in the syllabus for sufficient practice in map

making and map-reading. Not a separate section on map work be included in the geography course. It should form an integral part of every geography lesson. Map work should be taken up during or at the end of a particular topic in geography. It must appear naturally whenever and wherever the occasion demands. Pupils must feel that literacy and graphicacy are equally significant features of a geography course. Map work is not be restricted to map-making and map-reading. It should also include preparation of diagrams and graphs for the quick comprehension of statistical data. Even model making with clay or sand may form part of pupils practical work.

(viii) *Out of Class Activities* : Geography teaching if restricted to class room becomes, after some time, dull and boring. Content in geography must be linked with a variety of out-of-classroom activities like local area studies, excursions, observations, projects, topical events and the like. Some of these can be carried out outside the classroom in the school compound but other activities are organised outside the school and at times away from it. All these activities are taken up in the schools but in a slip shod manner. These should be suitably highlighted in the syllabus so that the teacher plans for them well in time. Each activity must have relevance with the topic given in the syllabus. It should express the felt-need of a particular content course

PRESENT SYLLABUS

In most of the states of India N.C.E.R.T. syllabus has been adopted. The New Educational Policy which is on the anvil, proposes a core curriculum for the entire country. An outline of the present syllabus is given below :—

Primary Stage classes I to V

Environmental Studies

Classes I & II. No formal geography teaching is suggested for these classes. However, the pupils in these classes are to acquire an awareness of their environment both natural and cultural through observations and action. The basic notions of geography in these classes relate to distances, direction, area, alternation of day and night, seasons and local space. The topics include family, home, school, neighbourhood, earth, sky and man's life.

Class III Geography forms Part of Environmental Studies. It includes the study of Home Region or the Home State.

Class IV Homeland.

Class V Our World.

Middle Stage—Classes VI to VIII

Social Sciences

Geography at this stage forms part of social sciences. In the geography syllabus the world is studied continent by continent. At the end of the course is presented geography of the Homeland.

Class VI LANDS AND PEOPLES

(a) Maps (b) The Planet Earth (c) Africa (d) Asia.

Class VII LANDS AND PEOPLES

(a) The Atmosphere and Hydrosphere, (b) Australia and New Zealand, (c) South America, (d) North America, (e) Local Geography.

CLASS VIII LANDS AND PEOPLES

(a) Climate, (b) Changing Face of the Earth, (c) Europe, (d) India.

Secondary Stage—Classes IX and X

Social Sciences

Class IX MAN AND ENVIRONMENT

(a) The Dynamic Environment, (b) The Gifts of Nature, (c) Interaction between Man and Environment.

Class X INDIA ON THE MOVE

An economic geography of India—(a) Terrain (b) Climate (c) Agriculture (d) Irrigation (e) Minerals and Power Development (f) Manufacturing (g) Transport and Trade (h) Human Resources.

REFERENCES

1. Brubacher, John S., (1981), *Modern Philosophies of Education* Tata-McGraw Hill, 155.
2. Gopsill, G.H., *The Teaching of Geography*, Macmillan, 254–260.
3. Saylor, J. Galen & Alexander, William M, (1956), *Curriculum Planning and Development*, Digital Preservation Foundation, Chandigarh

NATURE AND SCOPE

The content, methods and techniques in geography have changed so often that it sometimes becomes quite difficult to know what real geography is. The views expressed by different thinkers regarding the nature of geography, from time to time, have created rather than solved difficulties. For a student of geography it is worth while to have a clear idea about the nature of his discipline. He must know it and understand it for several reasons. (Roger Minshull, 1970). It provides a framework in which knowledge acquired in connection with the world can be suitably fitted. It helps pupils, students and research scholars to keep to the right track. It helps the teachers to know what they are teaching and what is relevance of geography to education and everyday life.

For a fair comprehension of its nature the historical development of geography needs to be examined. This development has been twofold. One may be designated as outward development. It is related to the progress in the exploration and discovery of planet earth. The other may be called the inward development or the strides taken in the growth of geography as a discipline.

EXPLORATION AND DISCOVERY

Several centuries before Christ two great civilisations flourished and decayed along the shores of the Mediterranean sea. They were the Aegean or Greek (Greece) and Roman (Rome). The other civilisation of this region were the Egyptians (Egypt), Minoans (Crete), Phoenicians (Cyprus) and Assyrians (Iraq). These powers were in constant search of new trade routes and trading centres.

To *Greeks* the then known world was confined to the shores of the Mediterranean Sea. Alexander's invasion opened a new land route to trans-Caspian lands of Persia, Afghanistan and India. Scylax, a Greek adventurer, explored the Indus. Greeks also explored the African coast, skirting the Red Sea, as far as Somalia. They had established their colonies in Alexandria and in other parts of Egypt

Roman's, in Europe, went northwards as far as Great Britain. Like the Greeks they also set up their colonies in Western Asia. In Africa they went as far as the source of the Blue Nile. Romans held their sway upto 1st. Century A. D.

In *Europe* the progress in the field of geographical explorations came to a stand still during the next ten centuries. This period in European history is called 'Dark Ages'. The developments in other parts of the world were noteworthy.

In *India*, Buddhist missionaries went to different parts of Asia to spread the teachings of Lord Buddha. They travelled over high mountains and by sea. Some of these monks belonged to Kashmir. Kumarjiva visited China in 5th century A. D. Gunavarnam left Kashmir for Ceylon and finally reached Java. Shyam Bhat, Thumi Shombotta of Tibetan scriptures, went to Tibet. A number of chinese pilgrim-scholars, like Fa-Hien and Heoun-Tsiang, visited India. When Marco Polo reached the court of chinese emperor Kublai Khan, during fourteenth century, he was surprised to find Kashmiri tantrins there. Much of south-east Asia was under the suzerainty of south Indian kings. The living testimony of the cultural and other contacts between India on the one hand and Cambodia, Indo-China, Thailand and Indonesia are the temples of Barbadour and Angkor Vat. A contact between America and India is discerned in the impress of Indian culture on the ancient civilisations of Aztec and Maya or Inca.

The situation of *Arabia*, at the meeting place of the three continents of Europe, Africa and Asia, served as a bridge between the East and the West. The advent of Islam in 6th century A. D. saw the rise of Arab power and its spread in all the three continents. Soon Persia, Syria, Egypt, northern states of Africa, parts of southern Europe, south and sout-East Asia came under its influence. Imbued with religious zeal and fervour the Muslim missionaries carried the message of Islam to different

and distant parts of the world and in this process explored new lands. Two Muslim explorers Ibn Hakul and Ibn Batota travelled for about thirty years in different parts of the world.

Coming back to *Europe*, the travels of an Italian, Marco Polo, opened a new chapter in the field of exploration. He left Venice in 1271 A. D. to reach China by land route. He returned by Sea. These travels revealed much of Asia. Land routes being unsafe attention was then directed towards the sea. This gave impetus to the rise of several sea powers in Europe. New horizons in the geographical discovery were opened when, in 1492, Christopher Columbus discovered America. The quest for a new sea route to Indies prompted Vasco de Gama to go round the Cape of Good Hope, in 1497, and reach India. From late fifteenth century A. D. was ushered in, what is commonly called, the Age of Discovery. The greatest achievement of the time was the circumnavigation of the world by Fernando Magellan in 1519-22. The British, French and Dutch adventures joined the Spanish and Portuguese explorers in this fray. This period saw the establishment of colonies in the world.

The hectic activity continued unabated in the centuries that followed particularly regarding the interior of the continents. Some important land marks in this sphere are the discovery or exploration of Brazil by Pedro Alvares Carbal in 1500 A.D., Australia and Newzealand in 1642 by Abel Janszoon Tasman, River Gambia in Africa by Mungo Park in 1795, Antarctica by Charles Wilkie in 1840, Zambesi River and Victoria falls by David Livingstone in 1851 and 1856, Greenland by Robert Peary in 1892 and central Asia by Sven Hedin from 1896 to 1908. Robert Peary and Ronald Amundsen reached North Pole and South Pole respectively in 1909 and 1911. Royal Geographical Society, founded in 1830, played a commendable role in the exploration of Africa and Polar regions.

With the conquest of Mt Everest by Edmund Hillary and Tenzing Norkhay, in 1953 and the land traverse of Antarctica, a year later, by Hillary no *terra incognita* is left. Almost all parts of the world stand explored, surveyed and mapped now.

GROWTH OF THE DISCIPLINE

The growth of geography as a discipline can be conveniently studied period-wise

Ancient

The adventurous spirit and comprehensive mind of the Greeks laid the foundations of geography. The very name geography is of Greek origin. Their contribution has been manifold. They established the sphericity of the earth, calculated its circumference, gave the concept of globe, introduced the system of parallels and meridians. The study of geography was divided into two parts. Natural philosophy deals with the knowledge of physical phenomena, while the description of the regions was included in chorography. The notable Greek philosophers were Eratosthenes, Hipparchus, Thales, Pythagoras, Herodotus, Plato and Aristotle. Plato and others considered geography as part of physics while Aristotle thought it to be a branch of mathematics like astronomy and geometry.

The two outstanding Roman philosophers were Ptolemy and Strabo. Ptolemy prepared the first map of the then known world in which use was made of lines of latitude and longitude. Strabo wrote volumes on the lands and people of his times. He was taken as a model for descriptive geography by later day writers.

Among others, Aryabhatta, Brahmagupta and Bhaskara were the noteworthy thinkers of ancient India who contributed to mathematics, astronomy and geography.

Excellent geographical treatises were written by Arab philosophers. These include '*The Elements of Astronomy*' by Al-Farghānī, '*Hakīmīte Tables*' by Ibn Yusuf and the '*Book of the Description of the Earth*' by Al-Khwarizmi and Al-Battani. Most of the books written were on mathematical geography. Ibn-Khordadbeh was commanded by the Caliph to write a book of roads and provinces. Al-Yakubi wrote the '*Book of Countries*'. Other reputed Arab philosophers were Ishtakhari, Ibn Haukul, Al-Masoodi, Al-Idrisi and Al-Zarqali. Al-Berun's '*Kitab-ul-Hind*' is an authentic and accurate account of Indian thought, religion and life of that time, including its geography.

Mediaeval

The mediaeval period in geographical thought began with the advent of 'Age of Discovery'. The excitement and stimulation that preceded and followed voyages to far off and unknown lands made serious demands in

the fields of cartography and geography. This acted as a catalyst for their improvement and development. Observations had to be made and recorded regarding the weather, winds and ocean currents for planning voyages and expeditions. At the same time a large body of information regarding the newly discovered lands had to be organised and compiled. An Englishman, Hakluyt made a notable contribution in this regard. Peter Apian was an outstanding astronomer and cartographer of 15th century. Sebastian Munster (1489-1552) was an accomplished geographer whose book *Cosmographia* was considered as a standard work on the subject.

The appearance of two formative works, in the early 17th century, marked the transition from the mediaeval to early modern period. One was *An Introduction to Universal Geography* by Cluverius. It was published in 1626. It is an early attempt in regional geography. The other was the *Geographia Generalis* by Varenus, published in 1650. Varenus, on account of his researches, is considered as one of the founders of scientific geography. Varenus divided geography into "general or universal" and "special or chorography." These, in due course, were identified with systematic and regional geography.

Other important events of the period were the establishment in 1662 of the Royal Society of London and of the French Academy of Sciences in 1666. Both of these societies helped in the phenomenal growth of the systematic sciences. The discoveries, inventions and principles of the systematic sciences were put to use in surveying, cartography and in the explanation of physical phenomena. The impetus to the development of scientific geography was given by a German philosopher, Immanuel Kant, through his lecture course on physical geography, from 1756 to 1796, at the University of Königsberg.

Modern

The founders of modern geography, recognised and acclaimed all over the world, were two Germans, Alexander Von Humboldt and Carl Ritter. They lived in Berlin and died in the same city and in the same year.

Alexander Von Humboldt (1769-1859) was a man of versatile genius. He had received training and developed interest in botany and geology. He travelled through Rhineland to England in the company of George

Forester. Next he visited Spanish colonies in America. He served in the Prussian department of mines. He was invited by the Russian government to tour the mineral regions of the Urals and western Soviet-Asia. Humboldt's contact with Goethe and Schiller helped him in his philosophic approach to nature. He stayed in Paris for twenty years, where he enjoyed the company of great scientists like Gay Lussac, Laplace, Lamarck and others. This contact with great scientists sharpened his scientific sensibilities. He made innumerable observations and there was hardly anything in nature which did not arouse his scientific curiosity. Efforts to co-ordinate all observations of natural phenomena lead Humboldt into geography. On his return to Berlin, in 1827, he was in a position to fulfil his ambition of publishing a treatise on geography. He wrote '*Cosmos*' in five volumes. Among other things he emphasised empirical form of research, the value in geography of comparative method and the graphical representation of statistical data.

Carl Ritter, (1779-1859), had joined the university of Halle, for a short period, where he studied mathematics, philosophy and history. In 1817 he published the first volume of '*Erdkunde*'; The second volume was published a year later. His works created a sensation in the literary circles of Germany. He was appointed the first professor of geography, in the newly created department of geography, in the Berlin University, in the year 1820. He was acclaimed as the master who first made geography as a scientific study. In this university he lectured, wrote papers and guided research till his death and inspired a host of students. Ritter laid stress on the significance of empirical and comparative method in research. He emphasized the importance of natural, in place of political, divisions of the earth surface. He subscribed to teleological view point so far as the relationship between man and nature was concerned. He was influenced by idealists like Schelling, Hegel and Kant.

The two founders of modern geography came into contact with each other in 1807 and became friends. They showered sufficient praise on each other and were aware of their interests and activities. Both Humboldt and Ritter believed in the concept of unity of nature and physical geography was set the task of finding that unity. Though both believed in the unity of nature, their philosophic approach to nature was different. Humboldt was a pantheistic and Ritter an idealist. Ritter saw that this

unity was ordained by God for the development of man. They also differed in the sphere of their work. Humboldt's domain was systematic physical geography and Ritter's that of regional human geography. The work of Humboldt and Ritter almost overlapped and was in reality complementary. Form and method was given to systematic geography by Humboldt. Ritter founded regional geography. Together they gave almost a complete and a modern base to geography.

Dualism

Both A. V. Humboldt and Carl Ritter died in the year 1859. Soon after their death was published Charles Darwin's '*Origin of Species*'. The impact of Darwinian evolutionary thought was so prompt and profound that it revolutionised the philosophical and scientific thought of the time. All the systematic sciences were reorganised and remodelled in the light of Darwinian principles. But the position in case of geography was entirely different. The exit of the founders of modern geography from the scene was detrimental to the interests of geography. That the work of these great masters was complementary was not realised by the students of geography even during their life time. Immediately after their death certain facets of their work were overstressed which resulted in the appearance of cracks in the geographical thought.

Peschel, through his lectures and essays, lead geographers to study the morphology of landforms. This was an attempt to present geography as a systematic science, making it in tune with the prevailing scientific atmosphere. His views were corroborated by Richthofen, who was basically trained as a geologist. Penck and Davis also extended their support to this idea. Thus physical geography represented the major field of geography. It was considered to be real geography. Natural features were studied in their own right but human features were studied in terms of their relation to natural features.

A reaction had set in which culminated in the publication of Ratzel's '*Anthropogeographie*' in 1882. His purpose was to establish the human geography as the major field of geography. He presented human geography on systematic lines and on Darwinian principles. Ratzel saw man as an end product of evolution moulded by physical environment. He strove to reverse the previous tendency to overstress physical geography. He rescued study of man from his subordinate position and

put him as part of physical environment. Ratzel's influence spread far and wide. In France his ideas were further elucidated by Vidal de la Blache, Vallaux and Brunhes. His views were propogated in U.S.A. by Miss Ellen C. Semple. Huntington and Taylor were his followers in England. Some of the extremists in this camp pleaded for the elimination of 'Ge' from geography.

This schim in the geographical thought with emphasis at one time on the study of physical geography and at the other on human geography is called '*Dualism*'. Such a split in the field of geography has proved quite detrimental to the interests of this discipline and thwarted its progress.

The rift regarding the dualism of physical and human geography was resolved, in the begining of this century, by Alfred Hettner. He found man and nature inseparable in the complex union that forms the character of areas. Richard Harsthorne in this context asserts that "It is absurd on the face of it to think of human geography separate from physical geography... we do not have a field of two distinct fields, but rather a field in which certain of the features studied have been in large part determined by nature without man, whereas other features determined by man working with nature". Man is part of the earth and his material work, whether a farm or a factory, represents a composite of natural and cultural elements. In this connection Herbertson, wrote in 1906, "we cannot consider an inhabited country (a) part from its inhabitants without abstracting an essential part of the whole..... The separation of the whole into man and his environment is a murderous act... The living whole...is no longer a living whole when it is so dissected but something dead and incomplete. In view of these developments it can be safely concluded that physical and human geography are the two equally essential aspects of geography. Like the two sides of a coin these are inseparable so long as we want to maintain its validity. These aspects of geography have been likened to the two tubes of a binocular. In the study of geography one should concentrate more on the geographical scene viewed through the binocular rather than on the relative importance of the two tubes of the binocular. Whatever the divisions we need not ignore the unity of the whole. These divisions should not impede our efforts at analysing and describing both the world in which we live and the way in which we live in that world.

Dualism of another type is also traced in geographical thought. This pertains to its methodology and relates to systematic and regional geography. This began with the Greeks and can be traced in the works of Varenus, Humboldt and Ritter. Humboldt's accent was on systematic geography, while Ritter laid stress on regional geography. Richthofen and Hettuer are credited with closing this rift. Richthofen explained the relation of systematic and regional geography to each other and to geography as a whole. To him the distinction between the two is not a difference in materials studied but a difference in the method of study. The study of a particular feature or a group of closely related features as spread over the earth's surface or a large part of it is systematic geography. Regional geography on the other hand, studies most, if not all, features as they are associated in one of the areas of earth's surface.

NATURE OF GEOGRAPHY

Nature of a particular discipline is revealed through its content, methods or approaches and techniques. It is a well known fact that all these aspects of geography kept on changing, since 1860. This resulted in the growth of trends and tendencies which created rather than curbed confusion regarding the nature of geography.

In geography, like other sciences, methods and techniques help us in the acquisition of knowledge for a better understanding of the world. These are a means for building the content of our discipline. A note of caution needs to be sounded here. A number of techniques used in geography are shared by other disciplines. Take the case of a map. It is used by a geographer as well as by a cartographer. A cartographer is interested in the method of map-making but a geographer, in addition to rudiments of map-making, must know what has been actually mapped. To put it in a different form it may be remarked that a person who makes a map and stops is a cartographer and the person who uses a map, so prepared, in the understanding of the earth's surface is likely to be a geographer.

Content

In order to know the content of geography we must, in the first instance, agree on a definition of geography. Frank Levenham defines

geography as the "Philosophy of place—that is to say, the pursuit of wisdom with respect of place". To Lukermann, "the study of place is the subject matter of geography because consciousness of place is an immediately apparent part of reality——". According to Preston James "geography remains that field of study that focuses its attention on particular places on the earth's surface". A layman is interested in geography because it is the only subject that studies places and what people living in these places do.

Parts of earth's surface inhabited by man constitute places. These places combine together to form one place that we call the world. Knowledge about these places as well as the place forms the content of geography.

In geography we are interested in the study of places and also the people who live in these places. In other words in geography our interest lies in the study of man and his environment. We are also interested to know how people live in these places and how they make a living. The place is the man's habitat, making a living is his economy and the way of living his society. "Geography is concerned with the reality of the human habitat, the planet earth that we all have to live on and find a living on" (Balchin-1970)., Habitat, economy and society make up the content of geography.

The content in geography is organised in the form of (a) physical geography, and (b) human geography. Study of habitat or natural environment forms the content of physical geography and human geography includes the study of economy and society.

One of the characteristics of these places is that they differ from one another. These differences are partly because of the natural environment like the terrain, rocks, climate, vegetation etc. and partly what man has made of his natural environment. "His culture helps him to utilise the natural environment in a manner so as to give rise to humanised or man-made environment. This is discernible in the shape of his houses and hamlets, canals and crops, farms and factories. "A basic understanding of the physical environment remains essential to the proper appreciation of the economic and social superstructure, notwithstanding the highly developed technical skills of modern man—in the final analysis he must still live off and with nature." (Van Royen & Bengston).

Physical Geography is concerned with various aspects of our natural or bio-physical environment. Lithosphere, hydrosphere, atmosphere and biosphere form our natural environment. Only those topics from these four spheres are to be selected for study in geography as are significant to man. These topics are rocks, their types and arrangement, terrain or surface features, weather and climate, drainage, natural vegetation and native animal life. But these topics as such are too detailed to fill up volumes. We have, therefore, to be selective in the choice of subject-matter of these topics. The guiding principles should be to select those facts and features which help man in living at a place and also help him in earning a living. Rocks is a topic of study in geology and meteorology studies the conditions of the atmosphere. Whereas our study of rocks in geography is restricted to rocks at or near the surface of the earth, the geologist studies the rocks which even lie deep below. He makes a detailed and thorough examination of these rocks for their crystal structure, mineral content, fossils and their stratigraphy. In the study of the atmosphere geographer's basic concern is with its lower weather making layer while a meteorologist investigates other layers of the atmosphere as well.

For making his descriptions accurate and explanations exact a geographer has to draw relevant material from the corresponding natural sciences like geology (rocks), pedology (soils), meteorology (weather and climate), botany (vegetation), and zoology (animal life). This borrowing is not just repeating, or physically lifting, the material from these sciences but transforming it to suit the nature of geography. In all systematic sciences emphasis is on investigating the nature of the topic, discovery of general laws and the study of processes and systems. This is the limit of their interests. They stop here. It is from here that the work of a geographer begins. He is involved in studying the actual distribution of phenomena on the earth's surface. He describes and explains the complete and world-wide distribution of these phenomena.

Some critics have exaggerated the case of geography borrowing subject matter of other disciplines but they forget that all disciplines have some subject matter in common. Knowledge, for the sake of convenience, has been divided into a number of disciplines but it cannot be denied, at the same time, that all discipline, are interconnected. Even

the techniques of investigation adopted by various disciplines are common. An interesting example has been given by Brunhes where similar content and method, in two disciplines, has been used from two different points of view. A botanist separates cactus and aloe into two different species while he groups rice, wheat and corn in one family as cereals. A geographer who is also interested in presenting his knowledge in a systematic manner, groups cactus and aloe together as desert vegetation as these are found in deserts. He separates rice, wheat and corn as typical of different climates, economies and cultures in different parts of the world.

Human Geography is concerned with the study of man; how he lives and how he makes a living. Geographers have yet to agree on the common content of human geography. Its main branches are, (a) economic geography (resources, agriculture, industry, transport, communications, trade), (b) social geography (rural and urban settlements, health and disease, population and political geography), and (c) cultural geography.

In human geography, like physical geography, there are certain topics which are shared by it as well as by the corresponding systematic social sciences. Take the case of economics, farming and fishing, mining and manufacturing are the topics which fall within its purview. At the same time these topics are included in economic geography. Why this repetition? Roger Minshull (1970) presents the answer in the following words, "Only geography considers the activities of fishing, mining and manufacturing in detail, in the actual places and under the real conditions in which they take place." He further illustrates it with an example. Farming is a topic for study in agronomy, economics and geography. Each studies it from a different point of view. An agronomist is concerned with the method and an economist in production, cost and trade. A geographer is interested in the location of the different types of farming both in place and in relation to physical and economic factors. Geography is the only discipline that makes a systematic study of the earth's surface. It also studies spatial distributions and spatial interrelationships of phenomena.

Geography, therefore, is involved in the study of both inanimate and animate phenomena. The former are linked with land, water and air (physical environment), plants and animals (biological environment)

and man (cultural or social environment). But only those phenomena are studies as are distributed over the earth's surface and are somehow connected with the real surface. The contents of bio-physical environment, organised in the form of physical geography, are restricted to those phenomena which are of supreme importance to man. In the study of human phenomena, arranged in the form of human geography, the activities are confined to those which are essential for his survival in this world.

Let us sum up this discussion on content in these words of Roger Minshull " Geography exists as a study because phenomena vary from place to place. It has dignity as an academic discipline because the connection between varying phenomena can be studied and explained ...It has value in that it selects from everything on the earth's surface those aspects which, in order for him to survive, are most significant to man."

Methods Or Approaches

After discussing the content of geography and its organisation, it is essential to know the methods and approaches used for the study and presentation of its subject matter. A method or approach is the way in which we deal with the subject matter. These methods or approaches must be unique to geography. It is a well known fact that geography shares some common topics with other systematic sciences whether natural or social. It is on the basis of its methods that the treatment given to a topic is different in comparison to its treatment by a systematic science which employs its own specific methods.

The earth's surface is full of a large number of a phenomena. Some of these we select for inclusion in geography. At the same time the earth's surface consists of a large number of areas. Both the phenomena as well as the areas are different and distinct. It is not possible to study all the phenomena and all the areas at one and the same time. The practical and feasible approach is to study a single phenomena as it is spread over all the areas or to study all the phenomena as they are concentrated in any area of the world. These approaches are known as Systematic Geography and Regional Geography, respectively.

The founders of modern geography, Alexander Von Humboldt and Carl Ritter, advocated these methods in their works. Humboldt focussed his attention on all that existed simultaneously on the surface of the earth in terms of types of phenomena. He called this as the horizontal approach or systematic approach. It is also known as topical approach. Ritter, on the other hand, employed the vertical or regional approach of the study of areas filled with interrelated phenomena.

Systematic Geography studies the arrangement of one or more (but not all) phenomena on the surface of the earth. Such a study may be confined to a single topic like population or landforms. combined topics like climate (temperature, rainfall, pressure and winds), or multiple topics like climate, soil and vegetation. A systematic study may not cover the whole world. It may be restricted to a continent or an area. In that case it shall be systematic geography of that limited area.

Let us elaborate the systematic study of population. Here while dealing with the distribution of population, the world is divided into single topic areas of high, medium and low population. In its description several types of diagrams and graphs are prepared. The densities are shown on a world map. But in the explanation of population variations all topics of geography are used. The explanation further involves the use of non-geographical phenomena like education, nutrition, religious beliefs etc. In the first instance a systematic geography studies the phenomena as they are found on the surface of the earth at the present time. Later on he endeavours to draw conclusions, devise principles and formulate laws. Here he seems to drift towards natural sciences. It may be borne in mind that formulating of laws or principles is not that easy in geography as in natural sciences.

Regional Geography is the study of the combination of phenomena within some limited part of earth's surface. It is used in the study of formal or homogenous regions. In the given area or a region we study a number of phenomena like the terrain, climate, drainage, vegetation, land use, settlements, population etc. It appears as if the phenomena are super imposed one upon another.

Regional geography makes an in-depth study of a given area. The size of this area may vary between a continent and a village. It seeks to highlight the very characteristics of a region. A regional geographer

tries to show how various phenomena have combined together to give the region a distinct character or personality. Regional geography plays an integrative role for it studies the totality or interrelationships of geographical features. It is holistic in its approach. "The regional geographer studies, describes, and explains these differences in a detailed, disciplined and systematic way so that *our geography* becomes an orderly body of knowledge which gains immense value from the comparisons contrasts and causal connections which are then revealed." (Minshull, 1970). Let us not enter into controversy whether regions are a reality or that they exist only in geographers mind. One thing is uncontroversial that regional differences exist and it is the study of a regional geographer to study and explain these differences. Regional geography, writes Honeybone, is the very heart of geography, the central core, which more than any other feature gives the subject its unique character.

Systematic geography and Regional geography are the two methods of study and presentation of content of geography organised in the form of physical geography and human geography. These methods are interconnected and complementary. They reinforce each other. If systematic geography attempts to produce general concepts, regional geography tries to show us that every place on the surface is unique. "Regional geography is to systematic geography as the brain is to peripheral sensory nerves. It absorbs their discoveries and co-ordinates them." (Balchin, 1970).

Techniques

An evaluation of the various types of techniques used in geography will also help us to know the nature of geography. These techniques may not be necessarily unique to geography but he uses them so frequently that these have become part of geography.

The three basic techniques according to Balchin (1970) are literacy, numeracy and graphicacy.

The two aspects of written communication, the in-coming or reading and out-going or writing, constitute what we call *literacy*. Its attributes are a facile pen and a mastery of geographical vocabulary. The art of literary descriptions is one of the oldest techniques of geography. A

precise description is the most cherished and important aspect of geographical work. With it may be used other techniques as numeracy and graphicacy.

These precise and accurate descriptions can be attempted only after making observations and collecting information, which is possible through the technique of *field work*. Through field work a geographer goes out to observe and to record. Through field work he gets the first-hand experience of landscape, phenomena and distributions. He records the data on a base map and utilises it in the preparation of the required map. He may have prepared a questionnaire which he completes during the field work. He may also resort to field-sketching. He has to visit offices and departments to consult the primary sources and secondary documentary material. He may also use field work for testing his hypothesis. A geographer must receive sufficient practice and training in this technique before he embarks upon field work.

Not the entire ground shall be covered by his field work alone. A geographer spends only a part of his time in the field. Most of his time is spent by him in the library, map-room or in his study. He may have to depend on the investigations of other field workers. For some maps he has to depend on a surveyor, cartographer, geologist, pedologist or an ecologist. For his relevant data he depends on the figures printed by the Department of Economics and Statistics, Meteorological Centre, Forest Department, Revenue Department, Registrar General and others. But all these will constitute his raw materials. "This raw material in maps, tables, pamphlets, reports, and journals has all to be found, sifted, read, digested and then organised into a finished, logical book. The geographer cannot be roaming the Highlands and Savanna all the time; he must devote considerable time to reading, thinking, re-thinking, writing and re-writing." (Roger Minshull—1970)

In addition to words we communicate in numbers and other mathematical notations. This is *numeracy* or *quantification*. It involves the use of mathematical and statistical methods and brings precision to geography.

There is yet another method of communication, almost basic and vital to geography, the visual-spatial method. This is called *graphicacy*. It calls for the use of spatial records, maps and diagrams so as to make

visible what is ordinary invisible and draw inferences and conclusions. He uses maps to study spatial relationships, correlations and distributions of a number of phenomena. For this he uses thematic maps. Such maps have an advantage over air photographs for the latter cannot be used to study climate and population.....“ but just as the novelist uses words, the mathematician figures, the historian quotations, the scientist graphs and diagrams, the geographer uses maps.” (Minshull—1970)

To sum up geographical description is basically a technique of presentation. Field work is a technique for the collection of data. Use of mathematical or statistical methods help in the analysis of that data. Maps and diagrams, the visual-spatial methods, are vital at the three stages, mentioned above. The geographical material is acquired through observation and field work and by the persual of written records. The data so collected is tested by means of hypotheses and models. Finally it is organised in the form of physical or human geography and presented in the form of systematic and regional geography.

GEOGRAPHICAL VIEW POINT

Geography is not only an academic discipline but also a point of view. It is more than an academic discipline. It is also a point of view, a line of thought, an interpretation which helps us to understand the world. This point of view may be called geographical approach for it is unique to geography. In order to know what we mean by geographical approach, it is essential to know the position of geography among sciences.

The position of geography is expressed vividly in the often quoted statement of Alfred Hettner which has been further elaborated by Richard Hartshorne. Writes Hettner,

“Reality is simultaneously a three dimensional space which we must examine from three points of view in order to comprehend the whole. From one point of view we see the relations of similar things, from the second the development in time and from the third the arrangement and division in space. Reality as a whole cannot be encompassed entirely in systematic sciences, sciences defined by the objects they study. Other writers have effectively based the

justification for the historical sciences on the necessity of a special conception of development in time. But this leaves science still two-dimensional ; we do not perceive it completely unless we consider it also from the third point of view the division and arrangement in space."

The three ways of studying the reality are finding the relations of similar things (systematic sciences), development in time (historical or chronological sciences), and arrangement in space (space or chorological sciences). The three groups of sciences are concerned with the study of things in isolation, in time and in space.

Systematic sciences are further divided into natural and social sciences. 'Chemistry, physics and biology are the natural sciences, while economics, sociology and demography are the social sciences. For these disciplines the unit of study is an object or a phenomenon. Botany is concerned with the study of plants and demography with population.

History and palaeontology are the chronological sciences. In them the unit of study is a period of time. Since the chronological sciences are concerned with the sections of reality in time, they cannot have the singleness of content. For example a palaeontologist engages himself in the study of geology, botany, zoology and even anthropology of the period under discussion.

The chorological or space sciences include geophysics, geography and astronomy. Geophysics is concerned with the study of the solid earth in space and in the interior of the earth ; geography with the surface of the earth (the terrestrial space) and astronomy with the universe beyond (the celestial space). The unit of study in each case is an area of space. The chorological sciences are concerned with the study of sections of reality in terms of space. Like, history, geography as it deals with things and objects of many kinds in definite relations to place cannot have the singleness of content which subjects like mathematic, physics and chemistry possess (W.M. Davis). Geography studies phenomena of all the systematic sciences whether physical, biological or social. Colby has often asserted "that geography has no distinctive phenomena at the centre of its interest, as have, for example soil science, botany and chemistry" In this regard Hartshorne writes "Geography does not claim any particular phenomena as distinctly its own, but rather studies all phenomena that are significantly integrated in the

areas which it studies regardless of the fact that those phenomena may be of concern to other students from a different point of view".

Hartshorne further asserts that unless a systematic science discovers a physical laws it is a mere description. History without a causal connections is just a time table of events. Geography without causal connections is an encyclopedia.

Geography, therefore, is one of three methods of studying reality. Geography as a chorological science is as significant as choronological and systematic sciences are. Geography even acts as a bridge between these two fields. As a chorological science it is concerned with the study of the surface of the earth. Like history it is an integrating science. Here we have a subjects, writes Balchin, in which the approach is the reverse of specialisation, synthesis instead of analysis, an art in place of a science. In a culture beset by the dangers of specialisation, asserts Parker, geography offers a unique meeting place for many branches of knowledge. The basic functions of systematic sciences is described as the analysis and synthesis of particular kinds of phenomena. The basic function of geography is the analysis and synthesis of the actual integration of phenomena in sections of space. Geography is also described as a naive science as it examines reality from a naive point of view. He looks at thing as they are actually arranged and related on the surface of the earth whereas the systematic sciences take phenomena of particular kinds out of their real setting. These attributes of geography, called the geographical approach, differentiates it from other sciences natural or social. Geography is a study which looks at all of reality found within the earth's surface. Geography is to be defined essentially a point of view, a method of study.

Conclusion

Geography, as implied by its name, is concerned with the study of the world. It describes and explains the differences among different parts of the world, particularly in the present time, The study of the world involves the study of the environment as well as the activities of man. So we have a geography of nature and geography of man. The former is called physical geography and the latter human geography. Systematic sciences are engaged in the study of the natural and human features of the world. It is natural that geography seeks necessary knowledge from

the related fields. It does not merely pile up the facts but integrates them in the light of its distinctive chorological point of view. It cuts through these systematic sciences and takes from them knowledge that it requires for a full and complete description of a particular phenomenon, feature or process and for an accurate interpretation of their interrelationship. In return geography contributes to the systematic sciences what is called as the geographical approach. It reminds them they must comprehend their phenomena not alone in terms of their common characteristics but also in view of their location on the surface of the earth. From geography the systematic sciences take the techniques of maps and map interpretation. For a complete understanding of the reality geography plays a significant role. The systematic sciences break up the reality into individual parts and destroys its essential character. Geography brings these parts together and tries to present as complete a picture of the reality as possible. On account of the comprehensive character of geography, a geographer is expected to know all the sciences that pertain to the study of the natural and human aspects of the world. Geography is an integrating science. This attribute it shares in common with history. Despite the differences in their bases of integration, space and time, there is natural relationship between them. For the explanation of present geographical features reference is to be made to past events. Similarly, the interpretation of historical events requires some knowledge of geography of that place.

SCOPE

Scope of a discipline is comprehended from its definition. In this regard it may be remarked that there is no unanimity among geographers regarding the definition of their discipline. It is easy, they say, to define a geographer than geography and few geographers have ventured to do so. Most of them agree that the prime concern of geography is the surface of the earth and the man who occupies that surface and who has carved a habitat out of it. Man lives in any part of the earth's surface that we call a place or an 'area'. He also earns his living there. The area or place offers him certain potentialities and resources which he utilises to satisfy his wants and needs. So the geographers are interested in the study of the earth because it happens to be the home of man. It is place where he lives and works. To Broek and Webb, "Geography is the organised knowledge of the earth as the world of man. It deals with organic and inorganic phenomena not for their own sake but as they help us to under

stand the earth as the place where people live, work, meet and mingle transforming its surface into their habitat." Geography involves the study of the surface of the earth, its physical and biological components and also the man and his works. It is concerned with finding the interrelationship between environment and man. Here the environment is not to be restricted to physical or biological environment. Man has been introducing changes in his natural environment to suit his requirements. Man as a creator is utilising the raw materials of his natural environment to build the cultural environment. All these factors-physical, biological and cultural give rise to what we call as the total environment.

It is geography alone that studies the areal character of the earth. These areas are distinct and different from one another. Geography is interested in the distinctive character of these areas. He wants to know the form, the content and the function of these areas and their relationship with one another.

Geography is a chorological science—a science concerned with the study of areas. Hartshorne is of the opinion that geography is neither a purely natural science nor a purely social science. Zoe A. Thralls calls it a physical-social science. Of all the disciplines man's well being has been the concern of geography. Whatever he studies, be it rocks or rivers, he views them from their significance to man. It is on this account that geography has been called as a human science. On account of its concern for the welfare of mankind, geography, is beset with number of problems which demand urgent attention. Here instead of an academic solution, geography should come forward with a practical solution. Geography makes a sizeable contribution to the field of social and economic planning. Geographers have attended to such problems as coastal erosion, flood-control, water-supply and land classification. Conventional geography is mostly concerned with the present as it has evolved from the past. In applied geography a concern for the future is fundamental. Geography therefore is a science that studies the present and looks to future. This involve the projection of existing trends over a period of fifteen years or so as to present a picture of the near future.

SUB FIELDS OF GEOGRAPHY

Geography consists of a large number of sub-fields and fields of specialisation. This development, as in other disciplines, is an indicator of

progress. The classification shall be attempted on the basis of followings factors—(a) Content (b) Methods or Approaches (c) Techniques (d) Viewpoints.

As already explained knowledge in geography is organised in the form of physical geography (nature) and human geography (man). They are not two distinct, unrelated or separate fields. One forms the base or the foundation on which the superstructure of other can be, safely and securely built. *Physical geography* is concerned with the study of such natural elements as land, water, air, plants and animals. their distribution, interrelationship and significance to man. Rocks and relief are studied in geomorphology. Climatology studies the weather and climate. Oceanography includes such topics as waves, currents and tides. Hydrology studies the sources of water and their role in sustaining different life forms.

Biogeography is concerned with the study of plants and animals the biological environment.

Human geography is the study of man in his geographic aspects. Classification of human geography into its sub-fields is not that easy. We know that man lives on this planet and he makes a living. In addition he has a design for living. Based on these considerations we divide human geography into (a) Economic geography (making a living), (b) Social Geography (living), and (c) Cultural geography (design for living).

Economic geography as defined by Jones and Dicken, is the study of the relations of physical factors of the environment and of economic conditions to the productive occupation and the distribution of their output". The fields of specialisation in economic geography are *Geography of Resources, Agricultural Geography, Geography of Manufacturing, Geography of Transport and communications* etc.

According to Broek and Webb, each human group be it a society, community or a nation has its distinctive culture. The investigation of such collective groups in their areal differentiation and interrelations is called social geography". Social geography in the wider sense is identified with human geography. But in the present classification we will consider it as a branch of human geography. The subfields of social geography are *Rural and Urban Settlements, Medical Geography, Population*

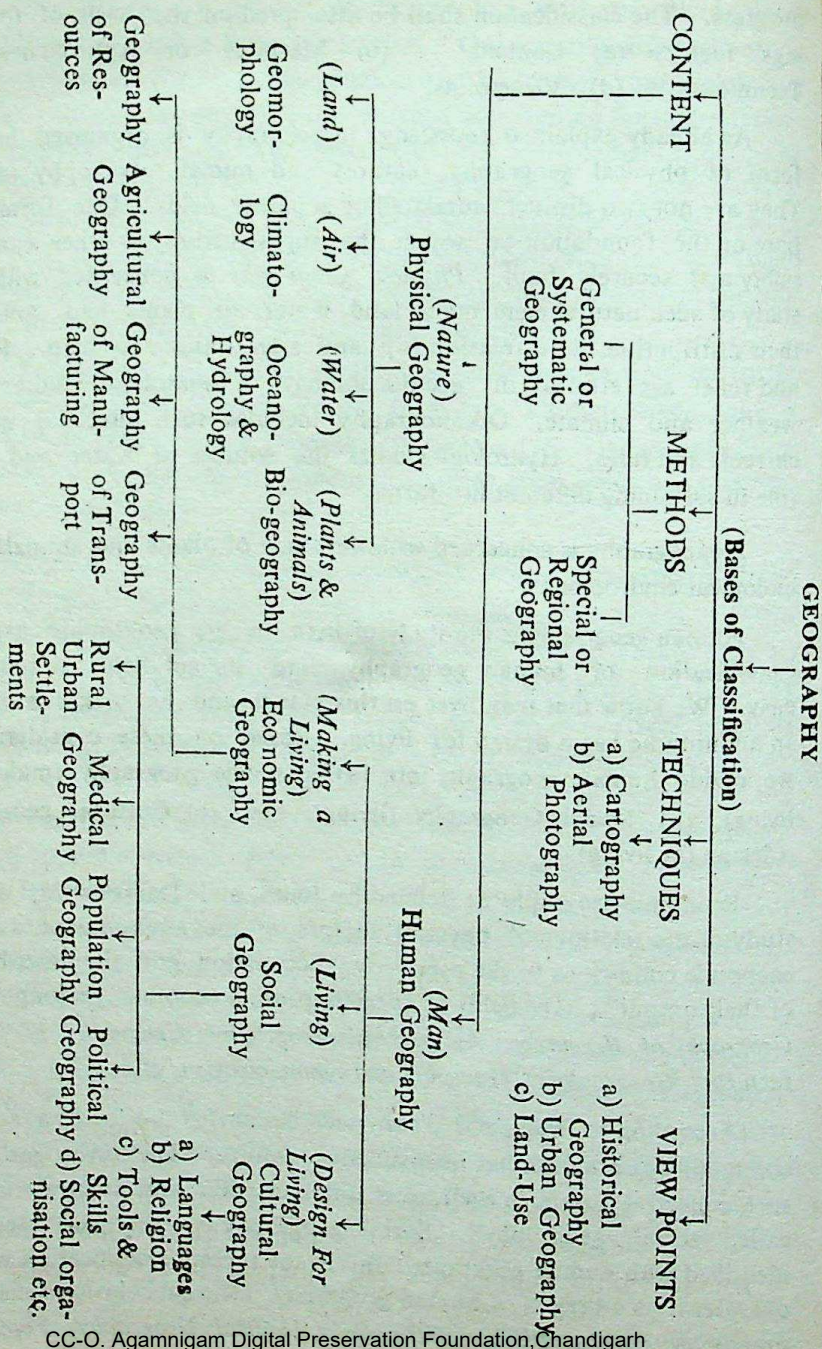


Chart showing Sub-Fields and Fields of Specialisation of Geography

geography and *Political geography*. Medical geography is defined, by R.P. Sharma, as "a systematic study of the spatial distribution of disease, health and ill health the causes thereof". The study of the political phenomena in the areal context is the field of political geography. Zelinsky defines population geography as "the science that deals with the ways in which the geographic *character of places* is formed by, and in turn reacts upon, a set of population phenomena that vary within it through both space and time....."

Broek and Webb have simply and effectively defined a specific culture as "The total way of life of people" or that culture is a people's design for living. The content of each culture includes systems of belief (ideology), social institutions (organisation), industrial skills and tools (technology) and material possessions (resources). Cultural geography is considered by some as part of social geography as we cannot think of a society without its cultural attributes. Richard Hartshorne uses the term cultural geography in place of human geography. Here the connotation of the term cultural is man made or humanised as against the natural or nature-made. Students of Cultural Geography study such topics as language, religion, dress, tools, skills, social organisation, etc.

Population geographers, including Trewartha, have put forth a convincing argument for the replacement of two fold, traditional, division of geography into natural and cultural elements, by a three fold division in which man, the physical earth and the works [of man are the three elemental groupings. Pleading for an elevation in the status of population geography they argue that the *Natural Earth* (physical geography), *Cultural Earth*, (human geography) and *man* the utilizer of the natural earth and creator of the cultural earth (theme of population geography) deserve equal status.

The two approaches for the study of geography are the systematic geography and the regional geography. *The systematic* or general or topical geography is concerned with the study of single feature (topic) spread over the earth's surface or a part of it. *Regional* or special geography, on the other hand is concerned with the character of areas which is the result of the integration of all the phenomena present in that area.

The branch of geography concerned with the study of the techniques of geography is cartography—the art of drawing maps and charts.

Another technique is the interpretation of aerial photography. Here the vertical photographs of the earth's surface are taken from aircrafts.

The other fields of specialisation are historical geography, urban geography and Land-use. When we examine the temporal aspects or the historical component of particular geographical phenomenon, the study is called historical geography. Urban geography is concerned with the location, growth and function of the towns. Land is one of our resources. Its use is affected by every aspect of physical and human geography. Land use is very central to geography. It is one of most challenging systematic topics.

REFERENCES

1. Balchin, W. G. V., (1970), *Geography-An Outline For The Intending Student*, Routledge and Kegan Paul, 1—12.
2. Broek, Jan O. M. & Webb, John W., (1978), *A Geography of Mankind*, Mc Graw Hill, 8, 27—28.
3. Debenham, Frank, (1957), *The Use of Geography*, The English Universities Press, 11.
4. Demko, George J., *Population Geography : A Reader*, Mc Graw Hill, Chapter I.
5. Hartshorne, Richard, (1939), *The Nature of Geography*, Annals of the Association of American Geographers.
6. Hartshorne, Richard, (1959), *Perspective on the Nature of Geography*, Murray.
7. Hartshorne, Richard, (1968), *Geography—The Field*, an article in the *International Encyclopedia of Social Sciences*, vol. 6, The Macmillan Company & Free Press, 115.
8. James, P. E. , (1969) in Cohen, S.B., *Problems and Trends in American Geography*, Basic Books, 5.

9. Jones C. F. & Darkenwald, G. G., (1959), *Economic Geography*, The Macmillan company. 7.
 10. Lukermann, F., (1964), *Geography as a formal intellectual discipline and the way it contributes to human Knowledge*, The Canadian Geographer, Vol. VIII, No. 6. 167
 11. Minshull, Roger, (1970), *The Changing Nature of Geography*, Hutchinson University Library, Chapters 1 to 6.
 12. Royen, William Van & Bengston, Nels A., (1967), *Fundamentals of Economic Geography*, Longmans. Prentice-Hall 41.
 13. Sharma, R. P., *Medical Geography of India*, National Book Trust, 1.
 14. UNESCO, (1965), *Source Book for Geography Teaching*, Longmans, Chapter 1 -2
 15. Wooldridge, S. W. & East, W. Gordon, (1958), *The Spirit and Purpose of Geography*, Longmans.
-

Geography as a distinct field of knowledge is now more than two thousand years old. It is in the works of classical Greek philosophers that we come across the use of the term 'geography' for the first time. The main theme of their writings was the description of the lands and people of the then known world which was confined mostly to the shores of the Mediterranean Sea. The growth of geography as an academic discipline had to depend on a number of factors. It was closely linked with the progress in discovery of our planet. The other factors were the advancement in cartographic techniques and scientific appraisal of data. Not much headway was made in either of the two fields till the advent of Age of Exploration and Discovery.

It was ushered in towards the close of fifteenth century and continued unabated upto the middle of present century. The geographical works, from the time of classical Greeks even upto the beginning of the nineteenth century, suffered for want of accurate factual information and authentic maps. Geography as an academic discipline is hardly hundred and sixty years old. Geography became a university discipline only during the twenties of last century in Germany and much later in France. Chairs of geography in the universities of Great Britain and U.S.A. were established during the present century. During this brief period geographical thought has passed through many vicissitudes which has given rise to a number of definitions, concepts and trends. For a student of geography it is a bewildering experience. A detailed study of these will help him in obtaining a clear understanding of his discipline.

I

GEOGRAPHY IS THE DESCRIPTION OF THE EARTH

Three centuries before Christ, Eratosthenes, a Greek philosopher of Alexandria, presented a descriptive account of the then known world in

his work called *geographica*. The term geography was used for the first time in this work. In a way credit goes to Eratosthenes for coining the term, 'geographic', for the description of the lands and people of the world. The root of this term is found in two Greek words 'ge', meaning the earth and 'graphic' meaning description. Geography, as the name implies, stands for the description of the earth. This tradition of writing descriptive accounts, started by the Greeks was developed further, later on, by the Romans. The works of Strabo and Ptolemy became models of descriptive geography for the later day scholars even upto the time of Malte-Burn (A. D. 1775—1862).

Description

Here a question arises. How did description originate in geography? For its answer we shall have to refer to the life of early man when he lived close to and at the mercy of nature. He had developed an awareness of the spatially narrow environment in which he found himself. This awareness was essential for his very survival on this planet where he found himself, as a weak and defenceless creature, face to face with the ever changing elements and forces of nature. This cognizance of his physical environment laid the foundation of geography. He became a geographer, so to say, as soon as his rational mind put to service such mental activities as observation, comparison and reflection.

Moreover, he was always curious to know what lay beyond his immediate horizon. He travelled to far off and unknown places to find the truth for himself. On his return he gave to the stay-at-homes an oral description of the places he visited and the people he saw. Geography, naturally, developed as a subject of common interest in order to satisfy man's curiosity about the world that differed from place to place. During the historical period the oral descriptions were supplemented by written accounts. From ancient times, with the advancement of human civilization man's world continued to expand beyond his habitat and new knowledge about it was poured through the narratives of explorers, conquerors, traders and travellers.

Explanatory Description

These descriptions, though based on direct observations, were too detailed and often contained, among other things, their personal experiences. Such traveller's tales could not be accepted as geography but

took the form of travelogues and official gazetteers. These, at best, furnished the crude raw material from which after refining could be distilled an academic product that we call geography. But we do not stop here. For description alone is not geography. Like other sciences, in geography the description should, invariably, be followed by explanation. Modern geography rests on such explanatory descriptions. "One must analyse successively the variety of factors and phenomena encountered in a given area or present on the earth's surface, their characteristic features, why they are where they are, and why their extent is what it is, how they have evolved in space and time and the consequences of all kinds arising from them" [UNESCO 1965].

In geography we are interested in the study of places and people. The topics in geography are wide and varied. Environment is the object of study of a number of physical and biological sciences. Similarly, social sciences are concerned with the study of man and his activities. For reinforcing and supplementing explanation in geography these sciences are to be approached for obtaining relevant data and results. This is not something extraordinary. It may not be considered as a weakness of geography. Every branch of knowledge has to depend on other sciences in order to become a complete unit in itself. Further, in the explanatory descriptions use is, very often to be made of comparisons, contrasts and causal connections. Geography then becomes an orderly and systematic description of an object or a phenomenon as it is located on the surface of the earth and so far as its usefulness to man is concerned.

The Earth

So long two terms—'geography' and 'description'—in the above statement have been discussed. The discussion remains incomplete if the term "the earth" escapes our explanation. Here let us ask the fundamental question. What is our earth? The answer is quite clear. It is one of the planets of the solar system. It is a unique planet for certain reasons. It is the only planet in the solar system or for that matter in the entire universe, known to this date, where the range of temperature is so narrow that matter exists in all the three states—solid, liquid and gas. In addition to solid rocks (lithosphere) it possesses water (hydrosphere) and air (atmosphere). On it is found life in numerous and diverse genera and species. In the biological world man, *Homo sapiens sapiens*, occupies a distinctive and unique position because of his intellect.

As a rational being he has given birth to science which studies his environment and his own self. With his creative potentialities he has devised technology that has empowered him to play a dominating role on this planet. The surface of this planet presents a rich mosaic because of the outcome and interaction of multitude of factors and conditions obtainable on it, in it and around it.

Now, as geographers, are we concerned with the study of this spinning sphere in space? No, because earth in space is decidedly the field of astronomy. Astronomy, like geography, is a chorological science but, unlike it, its study is confined to celestial space. There are a number of physical sciences or earth sciences which study various aspects of this planet. Geophysics is devoted to the study of physical processes relating to the structure of the earth or simply the physics of the earth. Geology, another earth science, studies the composition, structure and history of the earth. Which part of the earth is left for geography? For which part of the earth does the term "the earth" in the above statement stands for? It is that visible part of the earth with which we are familiar. It is the earth surface, the part of the earth which we know directly.

From earliest times man has conceived a section of reality, of which he is a part, which he calls the world. Geography is the study of the world as that term in common usage stands for. World for us is simply 'outer shell of the earth as high in the atmosphere and as deep in the ground as man can experience. In this connection Hartshorne (1939) remarks that 'the earth is where we live' or 'our unique interest in the earth is a unique interest in the earth surface'.

In the earth surface or the thin outer shell of the earth are found various forms of life—plants, animals and human beings. It is here that we have our farms and factories, build roads and canals and raise crops and animals. To conclude, the earth in the given concept is synonymous with the surface of the earth or the world.

II

GEOGRAPHY IS THE STUDY OF THE EARTH AS THE HOME OF MAN

This concept can also be stated as the study of physical environment of man particularly in relation to human activities. This idea advocated by Carl Ritter is based on his teleological and anthropocentric viewpoints.

His consideration of the earth centred on man. The aim of geography, according to Ritter was to study the earth's surface from the standpoint of man. He also felt that the earth in its totality must be purposeful and the purpose it served was that it was the training ground or nursery of man. Ritter believed the earth to be an organism made with divine intent to fit the needs of man to perfection : 'as the body is made for the soul, so is the physical globe made for mankind' (Dickinson—1969).

The concept has had a salutary influence on the content of geography. The number and diversity of the phenomena and objects on the earth surface is so great that their study would have made geography an unmanageable and encyclopaedic subject. But in adopting a criterion that only those phenomena are to be considered as have significance to man has made the task of a geographer comparatively simpler and his subject weildy, He is to select and study only those topics which have relationship with man's activities. This bias is necessary both to limit the field and to give it a unique point of view (Minshull—1970).

In such an arrangement geography is restricted to the study of land surface, the continents, because it is here that man lives. It is on the continents that the soils, rocks, weather and vegetation exist. The oceans, that constitute seventh-tenths of the globe, are neglected except and in so far as they influence the climate of the coastal areas, facilitate shipping and provide fishing grounds. This exclusion of the oceans is manifest in most of the published wall maps which generally show the continents or countries. Similarly, almost all the weather observatories are stationed on land. On the continents, too, the mountains, hills, deserts, snowfields etc. constitute negative areas. It is in this context that we claim that a square kilometer of area of Agra district is of greater significance in geography in comparison to an equal stretch of snowy wastes of the Himalayas. The former is teeming with hundreds of men, women and children working in the fields and factories earning, spending and produci ng wealth.

In physical geography the study is confined to five topics like relief, rocks, climate, soils and vegetation. Here again some, but not all, asj cts of these topics are considered. In the study of natural vegetation, for e ample, our interest is restricted to types of vegetation, their structure and growth. In rocks our aim is to know the formation of rocks, their nature and arrangement. The underlying principle in all these

cases is to touch only those aspects of a given topic which have a direct bearing on man and his activities. In the field of human geography no unanimity exists in the selection of topics. We live on this planet and also earn a living. The threefold division of human geography into *social geography*—aspects of living and *economic geography*—making a living and *cultural geography*—design for living has wide acceptance. The topics of social geography include settlements, health and disease, recreation and political organisation. In economic geography the main spheres of study are resources, agriculture, manufacturing, transport and trade. Cultural geography includes languages, religion, tools and skills.

There are some phenomena, objects or topics which although studied more scientifically in other related systematic sciences yet find a place in the content of geography for these receive an entirely different treatment here. Here the real conditions under which these objects and phenomena exist at some particular place are taken care of. These are studied just as they are on the earth's surface, not isolated from their environments. About the content of geography Minshull (1270) writes, "It has value in that it selects from everything on the earth's surface those aspects which, in order for him to survive, are most significant to man".

III

GEOGRAPHY IS THE SCIENCE OF DISTRIBUTIONS

This concept originated during the second half of eighteenth century. It was in vogue at a time when modern geography had yet to appear on the world scene. Geography, in view of this concept is considered to be a field concerned with the study of distribution of different phenomena on the surface of the earth. The phenomena are studied separately or in relation to one another. The concept was popularised by F. Marthe in 1878. According to Marthe geography is the study of the *where of things*. The concept was also revitalised by Sten DeGeer in 1923. To him geography was the *science of where*. The basic concern of the geographer is to know where his phenomena are.

Location is a fundamental concept in geography. Where is a particular thing located in earth space is the first question a geographer asks. Through an answer to this question we define its spatial relationships with other things. Each place has a definite location on the surface of

the earth which we express in terms of longitude and latitude (*absolute*), and in relation to other places or features (*relative*). The significance of location in geography is so great that every geography text or treatise begins with the treatment of location of the place, process or phenomena, included in its ambit.

Where is Agra located. It is situated on the Yamuna. Let us select one attribute or property of the location of Agra. It is a city located on a river. It is a riverine town. If on a map of India we show the location of other riverine towns of India, we have a map of a distribution. So when we compare the location of the property or element with the location of the similar properties or elements of other places we record a distribution. Similar procedure can be adopted with all those properties or elements which give character to a place. These can be the distribution of rubber plantations, coal mining areas, precipitation or teak forests. The three aspects of spatial distribution, identified by Broek and Webb, are density, dispersion and pattern. Density is defined as the average frequency of occurrence of a phenomenon within the area in relation to its size. Dispersion refers to extent of the spread of the feature in relation to the size of the area. Pattern means the geometric arrangement irrespective of the size of area.

In a topic like volcanoes, we begin with their method of formation. This is followed by kinds of volcanoes ; active, dormant and extinct. The discussion remains incomplete if it does not give the distribution of volcanoes on the surface of the earth. At the same time a particular kind of distribution has to be explained by giving causes thereof. It is a matter of common knowledge that two thirds of the active volcanoes of the world occur around the basin of the Pacific Ocean. Their activity and occurrence round this ocean basin has resulted in the appellation '*Pacific Ring of Fire*'. And why are they there, where they are ? The margins of this Ocean basin are characterised by the presence of zones of folding which also happen to be major lines of weakness in the earth's crust. It marks the meeting place or zone of contact, according to plate tectonics, of the continental and oceanic plates. An analysis of the spatial distribution of annual rainfall in India reveals that not all parts of the country receive uniform amounts of precipitation. India is divisible into five areas of varying annual rainfall ; very low (0-30 cm), low (30-60 cm), medium (60-1000 cm), high (100-200 cm) and very high (above 200 cm). Delimitation of the areas is to be followed by an exami-

nation of the causes which lead to marked variations in annual rainfall in these areas.

From these and other examples it is evident that analysis of spatial distribution is an essential feature of geographical study. Study of the distribution of phenomena is part, even an important part, of geographic description. But to claim that it constitutes the entire field of geography is wrong. The basic purpose of geography is to know the character of area and the study of distributions is one of the means to achieve that end. It is an exaggeration and an unfounded claim to say that geography is only the science of distributions. It is only a part but in no case the entire field. Distribution of phenomena is also studied by systematic sciences. They some times use a map to illustrate a particular distribution. Study of distributions of phenomena, over the entire world or a large part of it, is also the theme of systematic geography.

IV

GEOGRAPHY IS THE STUDY OF LANDSCAPE— NATURAL AND CULTURAL

This concept of geography has been pleaded by Otto Schluter, Carl Sauer and Patric W. Bryan. In this concept let us in the first instance know what we mean by landscape. Then we focus our attention on the natural and cultural landscape.

Introduction

The term landscape gained currency in the geographic literature of the English speaking world, particularly in U.S.A. and U.K., only recently. But the German form of this term, *landschaft*, has been in use, since the development of modern geography, at least for one hundred and twenty years. The German term *landschaft* has a double meaning. It means the concrete material objects in an area and the area itself. Introduction of this term has caused great confusion in geographical thought. The confusion was transferred to the term landscape as well. The result has been the appearance of as many definitions of *landschaft* or landscape as there are geographers.

Definitions

Landscape has something to do with an area of land, but it is not

the same thing as area. Some have likened it to a region but it is not a region even. Region is a larger piece of an area, while landscape suggests a smaller piece. Waibel defines landscape as "the sections of earth's surface and sky that lie in our vision as seen in a perspective from a particular point. Grano defines it "as the total impression aroused in us by a piece of earth's surface," To Sauer "landscape is an area made up of a distinctive association of forms," His definition has been summarised, by his followers, as "landscape is an area in so far it is material." Whatever these and other definitions have to convey most of the geographers agree that landscape is the visual aspect of an area. It is the external surface. It is a reality. In it are found materials both movable and fixed. It can change often when we call it summer landscape and winter landscape.

On the basis of these considerations, enumerated by Richard Hartshorne, let us, like him, arrive at a well accepted definition of the term landscape. Let us first of all know what it is not. Landscape is synonymous with neither an area nor with a region. Both these terms 'area' and 'region' are well defined geographical entities. It is not a label to be used for material objects of an area. It is not a sensation, for a sensation is unworthy for consideration by geography, which is an empirical science. It is not a label which we can put to the total of all visible objects in a area.

Now let us concentrate on what it is. Landscape connotes the external visible (or touchable) surface of the earth. Since it is literally a surface it includes only what we can see or feel from outside. It can be world landscape if we consider the entire surface of the world. But generally, we consider only that much area of the surface as can be seen at any one time. This surface is formed by the outer surfaces of bare earth, snow, ice, vegetation, water bodies or the man made features. Except for the water bodies the surface is not plane and is dependent upon the terrain of the land. A large part of the world landscape is formed of the cultivated fields of man and a small part formed by the buildings, metalled roads and the like.

Utility

Geography as chorography, is interested in the study of areas of the world. Landscape of an area is one of its aspects. The study of landscape is therefore an integral part of an area and an essential part too. The first step involved in the study of an area, through field work, is the gene-

ral examination of the area from different points of view. We begin with the form or picture of the land. When we enter it we compare the fields and forests, farmsteads and factories and for a brief period we ignore the study of such invisible features as monthly temperature or subsoil. In this first step we get the overview or picture without going into minute details of the area. In the words of Penck, "It is the outer surface that we actually first study. We examine, that is, the great irregular carpet of the surface form, noting the texture and designs in that surface and also the irregularities of surface whether formed by hills or buildings." Briefly in the study of the landscape we examine the surface which the area presents us under the sky. This we call the face of the earth. Landscape may also be defined as the external manifestation of things that are fundamental in an area. In case we start our study with the landscape our efforts shall be to explain what we find in it. This will ultimately include the study of nearly all that is significant in the area. Hartshorne sums up the utility of landscape study in geography in the following words, "The landscape, therefore is useful to geographer not merely because it comes easiest to hand but because the study of its forms will lead us to most, as least, of the significant features of the area. The utility of the concept of the landscape is thereby amply demonstrated."

Natural And Cultural Landscape

In our environment we come across parts of reality which has been created by nature without man and other parts which have been created by man working with nature. The first we call 'natural' and the second 'human or cultural'. The relation between the world of nature and world of man is a topic of great significance in geography.

Sauer in his design of landscape includes (1) the features of the natural area or the physical landscape and (2) the forms superimposed on the physical landscape by the activities of man, the cultural landscape. He has advocated the existence of natural or physical landscape and cultural landscape as the two components of the total landscape. In the former he includes all the natural features of an area and in the latter all the man-made forms on the face of the natural landscape. Seemingly, it is a natural and logical division of the landscape when we consider it as a collection of material features of an area. But on close examination it is difficult to separate one from the other.

This needs elaboration. Here is an example. Imagine a situation where a man belonging to an under developed society is in quest of a new habitat. In his search for land he reaches a particular spot which has not been visited by any human being so far. What he finds spread out before him is a gentle slope, with a forest cover and a brook tumbling down to join the stream flowing nearby. The landscape that he encounters there comprises the terrain, vegetation and water bodies, all creations of nature. This constitutes the natural landscape.

The man arrives at this spot with his family, with domesticated animals, seeds of cereals, and with his culture, the tools and skills. His first need is the shelter. The family sets to work with their tools and skills. Trees are cut from the forest, boulders collected from the stream bed and clay dug from the slope and a shelter is shaped with these materials available in the natural landscape. The shelter is the first man-made feature. The slopes that he has cleared of forest cover are terraced and in the fields so formed agricultural operations begin to solve his needs of food. The water from the brook is diverted through a canal into the fields. With the passage of time more and more man-made features appear in quick succession. With increasing numbers a stage comes when all that was natural or physical landscape got obliterated and converted into cultural landscape. And what is manifest now is the total landscape, where both the natural landscape and cultural landscape have mingled so intimately that it is difficult to separate them except in theory.

Richard Hartshorne vehemently opposes this division of landscape into two parts— the natural and the cultural for he asserts, "The contrast between the natural landscape and the cultural landscape is shown to be purely theoretical concept. There can be only one landscape; if man has not been there, it cannot be a cultural landscape; if man has entered the scene, the natural landscape is for ever lost." The sensible alternative, as suggested by Broek, is to differentiate between the natural and cultural elements in a landscape. Or we may replace the terms landscape by environment, which shall be the theme of discussion in another concept. Another alternative is to use these terms loosely and not strictly.

In *natural landscape* is included the relief of the land, water bodies like rivers and lakes, natural vegetation and native animal life. Man introduces changes in the natural landscape by adopting such practices

as agriculture, lumbering, mining, manufacturing, construction of roads and buildings, towns and cities. In doing so the natural landscape is utilised to produce a cultural landscape.

Cultural landscape hides or levels the features of the natural landscape and replaces them by man-made features. The landscape perceived by us is a combination of both these features the sequence is the imposition of cultural on the natural in varying proportions. In grazing area the chief cultural features are fences, scattered houses, trails and roads. In farming regions the scene present is one of fields of cultivated crops, farmsteads, animal sheds, grain stores and farm machinery. But inspite of these changes the basic plan of the terrain, lowland, upland or highland, remains unchanged. In the large cities much of the original landscape loses its wrinkles and remains covered by the buildings, roads etc. The humanised or the cultural landscape is indeed the visible geographical expression of a civilization and of the whole of its economic and social life. (UNESCO-1966).

MAN-ENVIRONMENT RELATIONSHIP

It is a well known fact that natural sciences study environment, social sciences including history study man and in geography we study both man as well as environment. Physical or natural environment and activities of man constitute a complete field of geography. The two are so completely interwoven, in the modern world, that it is difficult to separate one from the other. But during the development of this discipline a stage came when attempts were made to study one for the sake of the other and to find the relationship between the two. In the latter case the relationship was identified in terms of adjustment of man to his environment. The other extreme could be that man controls nature. The third being the reciprocal relationship or interaction between man and his environment.

V

GEOGRAPHY IS THE STUDY OF RELATIONSHIPS BETWEEN THE NATURAL ENVIRONMENT AND MAN

OR

THE ADJUSTMENT OF HUMAN ACTIVITIES TO THE NATURAL ENVIRONMENT

Let us trace the causes responsible for the development of this thinking. During the second half of nineteenth century physical geography dominated the geographical scene and human geography was relegated to background. Some German geographers, lead by Peschel, advocated and established the study of morphology of land-forms as the major field of geography. To this one sided action a reaction was bound to set in. In 1882 was published the *anthropogeographie* (or Human Geography) by Friedrich Ratzel, in Germany. Through his work Ratzel endeavoured to re-establish the dignity and restore the right place of human geography. Ratzel's *anthropogeographie* is the first excellent treatise on systematic human geography. It is scientific in approach as it is based on Darwinian doctrine of natural selection. Ratzel saw man as the end product of evolution. According to Darwin all plants and animals adapt themselves to their environment. Since man, according to Ratzel, is an animal therefore man also adapts or adjusts himself to his environment. Man, according to him, was the product of his environment. His activities were moulded and shaped by the physical forces that surrounded him. Man, like other animals, adjusted himself to his environment which in turn controlled his activities. Ratzel set out to prove that *man is a product of earth's surface determined by physical laws.*

Ratzel's ideas soon found favour in other countries of the world. Those who were inspired by his scientific approach to human geography were la Blache, Vallaux, Brunhes in France, Taylor and Huntington in Great Britain, and Semple in U.S.A. Miss Ellen C. Semple was an ardent admirer of Ratzel's ideas. She stretched them further and devised her own theories. These she presented to the English-speaking world through her book 'Influences of Geographic Environment' (1911). Writing of man she opines that *the earth has.....set him tasks.....directed his thoughts.*

Determinism

From these developments it is clear that Ratzel and his followers regarded man, like other animals, as a helpless creature who adjusted to his environment. Making Darwinian principles, enunciated in his *Origin of Species* as the basis they tried to prove that man too, as an animal, makes similar adjustments. According to them the environment exercised control over man's activities and even dictated them. The

geographical control, some extremists in this camp pleaded, was so strong that it determined the whole course of human existence. Their writings were characterised by a deterministic slant. These assertions culminated in what is called *environmental determinism* or *geographical determinism*.

There was another factor responsible for the development of geographical determinism. An attempt was made to make geography an exact science with verifiable laws like natural sciences. With this aim in view determinists looked for cause and effect relationship and predictable behaviour in the phenomena studied by them. Ordinarily there is no dirth of causal relations, connections or coincidences between one element of physical environment and the other. We observe causal connections between climate and soil, climate and vegetation, soil and vegetation, relief and climate, underlying rocks and soil, underlying rocks and water availability etc. Similarly number of such causal connections are found in the sphere of human activities. There is a close relationship between density of population and type and intensity of land utilisation. Intensive agriculture requires and feeds more people. Extensive agriculture is characterised by sparse and scattered population.

Not being satisfied with these realities of geographic field they tried to stress the idea in a different direction. An attempt was made to identify and present causal relationships between one factor of physical environment with particular activity of man. The length of the nose of people living in northern Europe was linked with the cold climate of that place. A nasal index was calculated and this was shown directly proportional to the temperature in that region. Huntington predicted that rioting took place among American negroes when the temperature rose to 33.3°C . In Indian context it may be said that people in Tamil Nadu and West Bengal consume rice and fish and so do people in Kashmir. It is by coincidence that people living in these areas excel in the field of education. Shall we generalise that all rice and fish eating persons are endowed with high degree of intelligence. Since such predictions are far from truth, they are unacceptable. They tried to distort geography in order to grind their axe. Those phenomena of geography were rejected which did not fit in their mould or where this causality could not be established. To a particular human response efforts were made to identify a stimulus in the physical environment.

This was, in a way, working backwards and working with a bias. Further, in every human endeavour they insisted for the identification of geographical factors when it is quite evident that along with geographical factors go historical, social, political and other considerations. Examples are not wanting when in the setting up of a factory at a particular place considerations of the availability of raw material, labour etc. have been overruled by psychological factors—the relations of an entrepreneur with his wife. A biased attitude with consequent distortion of the subject matter, was bound to substantiate and strengthen the hypothesis regarding man's adjustment to his physical environment.

Environmental determinism did not last long in Germany the place of its origin, where it staged an exit soon after human geography was restored to its position of prestige and honour. But it held its sway, in America and England, due to the influence of Semple, for a longer period of time. It can safely be said that the doctrine is not completely dead here though it has lost much of its vigour.

Possibilism

An alternative to geographical determinism is the doctrine of 'possibilism' contributed by la Blache, Brunhes, Febvre, Bowman and Sauer. Vidal de la Blache pleaded for the study of geographical environment and of man. He believed that the role of geography is the correlation of physical and human conditions in their spatial interrelationships. "The physical (natural) environment provides a range of possibilities which man turns to his use according to his needs, wishes and capacities, in creating his habitat." The conceptual framework of 'possibilism' given by la Blache was fully developed by a critical historian, Lucien Febvre. Febvre's ideas are beautifully summed up in his work 'A Geographical Introduction to History' (1924) in the form of following dictum. "There are nowhere necessities and everywhere possibilities; and man, as a master of possibilities, is the judge of their use." Possibilists admit that nature sets certain limits on man. Man is not completely independent of earth surface. But nature, at the same time, affords him a wide range of possibilities and man has to choose his actions from these, the limitations of time and cost notwithstanding.

Let us conclude this controversy between *determinism* and *possibilism*.

with these words of Minshull (1970), possibilists "are geographers, aware of the influences and limits of the environment, not fanatics setting out to prove a theory and distorting geography in the process. The possibilists see man circumscribed rather than determined, and nature as permissive and an 'adviser' rather than a ruler."

VI

GEOGRAPHY IS THE STUDY OF INTERACTION BETWEEN MAN AND ENVIRONMENT

Three view-points regarding *man-environment relationship* are conceivable. First, that nature dominates and determines whole course of man's activities. (For details refer to concept V). Second, that man, who is acquiring unlimited powers due to advancement in the fields of science and technology, controls nature. Third, that their relationship is reciprocal. The first two assertions furnish extreme view points and are, therefore, far from reality and unacceptable. The choice now falls on the third. It provides the real picture for here one is influencing the other. It speaks of an interrelationship. Here neither man nor environment are rigid but both are in a state of flux. They happen to interact with each other. Geography is assigned the task of finding this interaction between man and environment.

Sir Halford Mackinder, a British geographer, for the first time, defined geography as a subject whose main function is to trace interaction of man and his environment. This he did in 1887 while presenting his paper "Scope and Methods of Geography" to the Royal Geographical Society, London.

An explanation of the terms *environment*, *man* and *interaction* is necessary in order to understand this concept.

Environment

In this discussion on concepts of geography two terms used frequently are nature and environment. On several occasions one has been loosely used for the other. But in reality these have different meanings. By nature we mean all those creations of Nature in which man finds himself. These include landforms, rocks, soils, climate, vegetation etc. and their associates. All these constitute elements of nature. All these elements of nature influence one another and in doing

so get modified. A cumulative effect of the interrelationship of these elements of nature is environment. For example a place is mountainous (landforms), it is cold and dry (climate), and therefore no vegetation is found there. The net result is a highland cold desert environment.

The environment consists of two sets of elements, the biotic and the abiotic. The former constitute biological environment and the latter physical environment. The components of physical environment are inorganic and inanimate materials like land, water and air. Biological environment, on the other hand, comprises living things or life forms like plants and animals. Physical environment provides favourable conditions for the growth of life forms including man. Biological environment provides food and other useful products for the sustenance of man. Physical and biological environment make our natural environment.

The living forms or a biotic community exists in an abiotic environment. These together constitute an *ecosystem*. Ecosystem stands for a relationship between a biotic community and abiotic environment. The common examples are a forest, a lake, a desert etc. The science that treats of organisms in relation to their environment is called *Ecology*. A natural balance or equilibrium exists between the various life forms that exist in an ecosystem. This is called ecological balance. Man is part of the ecosystem and he derives his sustenance from it. A close relationship exists between the environment and the ecosystem. A change in the environment has a profound and serious impact on the ecosystem.

Man

Man is a unique creature on this unique planet earth. In zoological classification he is referred to as *Homo sapiens sapiens* meaning a large brained, upright, two legged animal. Man is a rational, and a creative being. He is a conquering animal in the sense that he conquers nature to suit his own needs. Man as a thinking animal amassed knowledge and skills. With every advance in civilisation he has been acquiring increasing powers. At present he has attained great heights of scientific and technological development which are the products of his rational mind.

Human behaviour is partly inborn and partly acquired. The learned portion of human behaviour is called culture. Culture is passed

on, from one generation to the other, by the social group. A culture is also represented by material objects. The creations of man whether buildings, tools or machines are all parts of material culture. He has been adopting techniques for the preservation and continuance of his race. With every generation man endeavoured to make his life, on this planet, more and more comfortable and protected it against the hazards of nature. In fact, the very basis of the civilisation lay in this reaction of man to nature.

Unlike other animals, man's response to the stimuli of nature is not restricted to instinctive level but is governed by the culture he has inherited from the social group. From the very dawn of civilisation man has been acquiring and improving upon the elements of culture. Moreover, he has been adding to his knowledge and wisdom. All these facts make his relationship with nature unique. He not only acts and reacts with his environment but also interacts with it.

Interaction

Man has been playing an active role in his environment. He is a dominating element in the environment. In this regard his role is becoming increasingly important day after day. Environmental factors, collectively or individually, impose certain restrictions on man. But we know that man has the capacity to fight against and surmount the obstacles of his environment. In this way we find that there is a profound influence of factors of environment on man but man also, on his part, exerts his influence on these factors of environment and in certain instances he has wiped away the constraints imposed by it. This influence of environment on man and man's reciprocal influence on the environment is what we call as interaction. In the words of Athelston Spilhaus, 'One essential difference between man and the lesser animals is that man strives to change his environment to meet his peculiar needs, whereas other forms of life in the course of time submissively adapt themselves to the whims of their surroundings'.

The interaction between man and environment is not uniform all over the world. It varies from place to place or better from environment to environment. At one place in this interaction, man has the upper hand while at the other nature dominates. It depends upon a number of factors. It depends as much on the personality and cultural back-

ground of man, who is a decision maker, as on the characteristics of the environment. His cultural background, among other things, includes his level of economic and technological development.

Geography studies some aspects of this interaction with the help of its specific methodology like observation, mapping and interpretation. Its sub-fields and fields of specialisation are also engaged in finding this interaction. This interaction is studied with reference to space and time. It is a spatial study when it refers to a particular area in the present day world. When we study interaction through time it is a temporal study. The sphere of man-environment interaction is viewed as a triangle of forces—the nature, technology and human institutions. Nature provides the base, technology bends the natural processes, human institutions regulate man-environment interaction.

Man-Environment Interaction

To elaborate this concept let us split the environment into its component though closely related parts and study how man interacts with these factors of environment.

(i) *Location* : This factor of environment fixes the position of a certain place on earth's surface and gives it certain fixed relationships with regard to oceans, mountains, climatic regions, friendly or hostile neighbours. It influences the individual as well as the community. India by virtue of its position at the head of the Indian Ocean commands an enviable location in Asia. The presence of the ocean in the south has given it a peculiar type of climate. Nepal on the other hand is a land locked country and its location is a great constraint on its economic development. Man has tried to counteract the dominant influence of location by conquering distance. No part of the world is at more than a days distance from the other. Faster means of transport and instant communications have made ours a shrinking world.

(ii) *Landforms* : The presence of mountains, hills, plateaus and plains give character to an area. A hilly country a plain area etc are the phrases used for this purpose. The activities of a country, state or region are conditioned by its terrain. The basic problem of Japan is that only 15% of its area is fit for cultivation the rest is rugged and mountainous.

Mountains which stand as barriers for the free movement of men and materials have been pierced with tunnels or motorable roads have

been built to great heights over them. Laying of railway tracks and building of bridges have connected, otherwise, inaccessible areas. Attempts are on to reclaim land from the sea. Arid and barren lands have been provided river water through canals. The phenomenal changes in the oil producing and exporting countries of the Middle East, where efforts are on to make deserts bloom, is indicative of the changes that man contemplates in order to change his physical environment. But inspite of these achievements physical relief is a dominant factor in the life and activities of a country or a region.

(iii) *Water Bodies*. Water bodies in the form of oceans and seas, lakes and marshes, springs and streams constitute an important feature of environment. Man has much to his credit in the utilisation of these water bodies. Canals drawn from rivers irrigate vast tracts of land in arid and semi-arid regions. Rivers have been harnessed for the generation of electricity. Swamps have been drained to provide land for cultivation. Desalination projects, though costly, provide ample quantities of potable water in desert areas of West Asia.

(iv) *Weather and Climate* : Of all the factors of environment the one of great significance is weather and climate. Weather determines clothes we wear and climate the houses and the ways and means of keeping them cool or warm. It influences the soils, vegetation, agriculture and animal life. Climate also determines our imports and exports. The difference in climate is the fundamental basis of our trade. Our health, happiness and capacity to work also depend on weather and climate.

A notable achievement of man to mitigate the severity of climate has been the provision of ideal working conditions indoors through air-conditioning. Two other achievements in this field are artificial rainfall and command hail project. Experiments have been carried out, with success, for seeding of clouds by chemicals to induce them to give rain. The command hail project has been successfully implemented in Uzbekistan, U.S.S.R., to avoid the destruction of cotton crop by hail. A non-toxic shell is fired into a hail cloud before hail storm conditions develop in it.

(v) *Structure* : It can better be called geological structure. This factor of environment pertains to rocks and minerals present in an area. The nature of underlying rocks determines soil, terrain and supplies of

underground water. Rocks and minerals provide raw materials for industries. Some localities have rich reserves of minerals and mineral fuels while others are deficient in these. Minerals can be only exploited if they are there.

Attempts are on to invent substitutes to replace metals. A world wide search is on to find a suitable substitute for petroleum.

(vi) *Natural Vegetation* : This is the natural plant growth that covers the earth's surface. The natural vegetation varies from region to region and includes the coniferous and hardwood forests, savanna and prairies. Softwood forests are utilised for the production of wood pulp which goes into the manufacture of rayon and paper. Forests have an ornamental value. They also influence local climate, check soil erosion, provide habitat for wild animals, regulate water supply and prevent floods.

(vii) *Native Animal Life* : It includes the wild life of a region as well as other animals like fish, birds and insects. It is the insects and pests which destroy crops and are more significant than the large animals. Similarly, amoeba, material parasite and tse tse fly take a heavy toll of human health and energy.

The manufacture and use of insecticides and pesticides have kept these insects under check. Number of diseases have now been eradicated. Much attention is being paid to human health and comfort.

In the sphere of natural products, obtained from the plants or animals, that are on the decline or in short supply chemical substitutes like polythene products and synthetic fibres have been prepared.

Conclusion

On the surface of the earth man, by working with nature, has produced number of features like farms and factories, roads and canals, houses and airports. These constitute the human or cultural environment. It is easy in theory to separate the natural environment from the cultural environment. But in practice it is difficult to do so. Thousands of years of occupation of the earth's surface by man and together with interaction with it has given rise to what we call total environment. The total environment is a product of interaction between physical, biological and cultural factors.

VII

GEOGRAPHY IS THE STUDY OF AREAL DIFFERENTIATION OF THE EARTH

This concept is based on the ideas of, a famous German geographer, Alfred Hettner (1852—1941). He expressed his ideas, regarding this concept, through a series of statements which he presented between 1898 and 1927. The phrase *areal differentiation* was used for the first time in 1925 by Carl Sauer. He did so while preparing a summary of Hettner's statements. Another German geographer, Ferdinand Von Richthofen, working independently, formulated this concept when he attempted a synthesis of the viewpoints of Humboldt and Ritter. The concept was immediately hailed and followed by a number of geographers. In the English speaking world this concept gained currency at the hands of, an American geographer, Richard Hartshorne. He was so fascinated by it that he considered areal differentiation as the fundamental definition of geography.

Hettner's View point

Hettner presented his first statement in 1898. He pleaded through it that the purpose of geography, from ancient times to present, has been knowledge of areas of the earth. With the advancement in the sciences, he felt, it is necessary to replace description in all branches of geography by search for causes. In 1905, Hettner wrote that geography is a chorological science that is a science of earth areas and places. Geography is to study their differences. He also held geography as a science of earth surface in terms of its regional differences—the differences found in continents, states, districts and localities. He gave final and complete expression to his ideas in the statement of 1927. In this he stated that geography, as a chorological study, is to know the character of regions and places. Man he considered to be a part of the character of an area. The essence of these statements of Hettner is that geography is the study of the areal differentiation of the earth's surface.

Other Contributors

In addition to Hettner there were number of geographers outside Germany who also propounded this concept. The first among these was Vidal de la Blache, the founder of French school of geography.

la Blache called geography as 'the science of place'. According to him the particular character of a place is expressed by the totality of its social diversities and diversities of its physical features. Another geographer who felt that geography was interested in the study of the character of areas was Cholley. He writes, "The object of geography is to know the earth", in its total character, not in terms of individual categories of phenomena, physical, biological or human arranged in a series but rather in terms of combinations produced among them because it is these combinations which create the different physical and human aspects which the surface of the earth reveals to us", Preston James defines geography as the science that "deals with the association of phenomena that give character to particular places and the likeness and differences among places". Richard Hartshorne remarks that "the essential basis of geographic work lies in the study of areal associations of phenomena on the earth. Geography is to study the way in which different earth phenomena are interrelated and react upon each other to form distinct environments or milieus, or spatial complexes. This is the essence of geographic work.

Explanation

It is a well known fact that one place or area on the surface of the earth is different from the other. This difference is observed between one continent and the other. North America is entirely different from the South America. This difference we see between two countries situated, even, in the same continent. U.S.A. and Canada are both situated in North America but they are two different places. Take any two states in one country and in the same natural setting, you will find them as two different areas. Himachal Pradesh and Jammu & Kashmir are situated in Western Himalayas. Both the states are mountainous but still they are different. Differences in areas are discerned even at the state level. The three regions of J & K are Ladakh, Kashmir and Jammu. Each place has a different character. This difference is noticed at the block level too. Even two villages in the same block are different. On the basis of these examples it can safely be concluded that one place or area, on the surface of the earth, whatever its size, is different from other places or areas. This property of the areas that they are different can be termed up in the form of the phrase areal differentiation.

What causes differences among the areas ? Why is the character of one area different from the other ? These are some of the questions that need to be answered. In an area two sets of factors or phenomena—the natural and the human—are noticed. The character of an area is the result of the combination or association of natural phenomena like location, terrain climate, vegetation etc. and human phenomena like man's way of life, his means of earning a living, his numbers and ideology. The character of an area is the areal expression of the totality of the conditions that exist there. The surroundings provided by the mountains, rivers, lakes, climate, vegetation etc are as significant in giving character to an area as the people who inhabit it and use it—their methods of farming and manufacturing, house types and settlements, land use and means of transport, density and composition of population. Here the natural diversities and population diversities go hand in hand. The distinctive character of places, like continents and countries, states and regions, is because of the areal association of the phenomena on the earth's surface. The outcome of this areal association of phenomena is areal differentiation.

Geography is assigned the task of studying areal association of phenomena. It is to study the ways in which different phenomena are interrelated or connected and react upon each other to form distinct environments. Definite mutual relationships or connections exist between different phenomena which give character to an area. Geographers are to trace and demonstrate these existing connections. Hettner and others have used such phrases as *causally related* or *causal connections* for such relationships. Here the role of geography needs to be differentiated from systematic sciences. Systematic sciences are concerned with the study of an individual phenomenon, its distribution and causes. Geography, on the other hand, emphasises the spatial association of several phenomena and the complexes they form in different area of the earth.

Area

According to the present concept the purpose of geography is to study the areas of the surface of the earth. It is worthwhile to know what we mean by the term 'area' and what are its properties.

Area stands for any part of earth's surface. It may be as big as a

continent or as small as a hamlet. All areas on the surface of the earth have two properties : location and content. Some areas possess a third property that is organisation. It is the outcome of its function (Encyclopedia). An area because of these properties is a unique entity and different from other areas. This shall be elaborated in the following section,

(i) *Area as place* : An area is characterised by its location. In view of its locational property an area is identified with place. Location is expressed in absolute and relative terms. Location is absolute when we express it in terms of degrees latitude and longitude. In relative location we give the location of an area with reference to another known area or feature. Absolute location of Delhi is $28^{\circ}39' N$ latitude and $72^{\circ}12' E$ longitude. While describing its relative location or position, we will, among other things, say that Delhi lies at the north-westren edge of the Ganga plain on the banks of the river Jamuna. It is evident that the locational references of one area cannot be same as that of another area. There can be only one place, that is Delhi with the location given above. Agra, for example has a different location. If we consider location alone it is clear that no two areas are or can be alike for their locational references are different. Every area, therefore, is unique in view of its location.

(ii) *Area as content* : An area is visualised in terms of what it contains or encloses or simply in terms of its content. The major task of geography is to investigate the content of an area. The character of an area is due to some association of the phenomena contained by it. In no two areas are phenomena of same characteristics present in same proportion nor do they possess the same pattern of distribution of these phenomena. Therefore in terms of content also every area is unique. Every area is different from another area so far as their content is considered. Gulmarg and Yusmarg are the two famous scenic spots of Kashmir. Both lie on the lower slopes of the Pir Panjal range. Both are meadows and have pine forests but still Gulmarg is not Yusmarg. In their character they differ from each other. This unique character of each scenic spot is due to their different content and location.

(iii) *Area as organisation* : Organisation in an area refers to the ways in which ~~CC-0. Mumukshu Bhawan Varanasi Collection. Digitized by eGangotri~~ natural and social functions are distributed in that part of the earth's surface. How man occupies the earth's surface,

how he is distributed over it and what pattern his activities particularly economic activities acquire are based on principles of convenience and efficiency. But these ways and means of organisation vary from country to country or culture to culture, hence from area to area. An area is unique in terms of its organisation as well.

Conclusion

The discussion on geography as the study of areal differentiation of the earth is to be concluded with the following remarks of Hartshorne, "Obviously there are many methods of studying the world but.....one of the most significant methods...is to study it by areas. Geography, if it strives to provide complete, accurate and organised knowledge to satisfy man's curiosity about how things differ in different parts of the worldmust consider the world in limited areas within which things are closely associated. Geography studies the spatial sections of the earth's surface of the world—seeking to describe and interpret the differences among its different parts, as seen at any one time, commonly the present time."

VIII

GEOGRAPHY IS THE STUDY OF THE SPATIAL RELATIONSHIPS OF PHENOMENA

The purpose of geography is the study of arrangement of phenomena in earth space or place. It is the study of the spatial relationships of phenomena. The two aspects of spatial relationships are localisation and areal differentiation.

Localisation

All phenomena on the surface of earth have location. In geography no phenomenon on the surface of the earth is considered in isolation. It is worthy of consideration only when we take stock of its location with reference to other places on the earth. It should be our endeavour to see that in geography all phenomena are localised. In keeping with their extent phenomena have a certain distribution. It is asserted that if phenomena in geography are not localised and delimited it is likely become unreal and abstract. So the golden rule is that all phenomena should be localised, delimited and placed in relation to one another. Maps can be of great use in effecting localisation.

In geography we should always insist for real situations. Man and his social and economic activities should not be separated from the surroundings but should be presented as an integral part of the environment. Economics studies phenomena in isolation but on the other hand economic geography deals with localised economic phenomena that are areally associated and give character to areas.

Areal Differentiation

The location of phenomena is to be followed by examination of relationships that exist between different phenomena present at a given place. It is a well known fact that causal connections exist between the different realms of nature. The phenomena of these realms of nature are united at one place to give it a particular character. Interrelationships are invariably found in the phenomena studied in geography. Cases of coincidences among the phenomena cannot be ruled out.

Explanation

In geography we are interested in the study of relationships between one phenomenon of the nature and the other, between the human and economic phenomena and between the natural and human phenomena. The relationship between the natural phenomena and human phenomena is quite complex. As such it must be studied thoroughly and carefully. It is in geography alone that pupils get opportunities to find reciprocal influences of these phenomena. In the beginning, in geography teaching, we must present those relationships for study by the pupils as are simple and easy to grasp. In latter classes pupils should be made aware of their complexity.

According to this concept one should not feel satisfied when he says that there are forests in J & K. He should locate them, delimit them, find their extent and show the pattern of their distribution. After this the relationships existing between forests and other phenomena of natural environment must be identified. The forests of a particular region have some relationship with such physical phenomena as rainfall, slope, soil and aspect. All of these co-exist in that area. Their association has given a particular character to that area. Farming is the subject of study of agronomist, economist and geographer. Geographer is interested in the location of different types of farming in various parts of the world. He also wants to know the impact of particular types of farming—like

ntensive or extensive—on the areal character of the place of its existence.

IX

GEOGRAPHY IS THE SCIENCE OF CAUSAL RELATIONSHIPS.

Geography is interested in the study of phenomena found on the surface of the earth. It studies their spatial relationships; location and distribution. It is to study, according to the present concept, their relationships or better causal relationships.

Development

Geography as a science of relationships developed, in the middle of last century, with the restoration of human geography to its legitimate position. Before that attempts were made to make geography the study of natural phenomena only. Physical geography represented the real field of geography and study of human geography was ignored and neglected. In an attempt to restore the position of human geography by Ratzel, in 1882, and his over enthusiastic followers foundation was laid for the study of causal relationships in geography. The study of causal relationships was one way traffic between the physical environment and human activities. This after sometime took the form of geographical or environmental determinism, when it was stressed that physical environment determined activities of man. To a particular human response efforts were made to trace the stimuli in the physical environment. Much harm, than good, has been done to geography, for the following half a century, by these assertions. With the restoration of study, of human geography at par with the physical geography and the establishment of physical and human geography as inseparable and essential aspects of the field of geography the concept of relationships fell into disuse at least in Germany. While in other parts of the world it still lingers on.

One procedure is cited here for illustration. Maps showing distribution of phenomena are compared with one other. A physical map, a soil map, an irrigation map, a map showing distribution of a food crop are super imposed or compared as such. Attempts are made to establish, on the basis of this comparison, causal relationships between two or more phenomena. A comparison between the physical map, soil map and the map showing the distribution of rice cultivation in India shows that rice cultivation in India is mostly confined to areas of alluvial soils be it in the

deltaic regions or in the interior plains. Thus it is generalised that a causal relationships exist, between rice cultivation and alluvial soils, in India. But instances are not wanting when we observe similarities in some patterns of distribution of phenomena where one phenomena does not necessarily cause the other but the similarity is just a connection or mere coincidence.

Three terms need to be made clear at stage. When one phenomenon is the cause of the other we say that causal relationships exist between the two. Whittlesy calls causal relationships as causal connections, and Brunhes uses the term causality for it. We call it a connection when two phenomena are always together but one does not cause the other. The third probability is that any two phenomena are together by coincidence. Therefore, to say that causal relationships or causal connections or causality can be found in all phenomena of geography is wrong. We have to look at the same time for connections and coincidences.

Natural Phenomena

Causal relationships are found between one phenomenon of the natural environment and the other. These are noticed between climate and soil, climate and vegetation, relief and soil, relief and climate. The presence of a mountain range between two places can act as a climatic and vegetation barrier. The Pir Panjal range in J & K affords one such example, To its south lies Jammu province and to its north the Valley of Kashmir. There is a marked difference in climate and natural vegetation on its either side. North Western Europe enjoys a warmer climate in winter when compared to other places farther inland on the same latitude because of the North-Atlantic Drift that washes its shores. Soils tend to be infertile and shallow where underlying rocks are hard and resistant. Our geography course is full of such instances where relationships exist between one phenomenon of the nature and the other. But at the same time two phenomena of natural environment can exist side by side at the same place and time which are connected together but have no causal connections. Take the case of azonal soils they have no relationship with the climate or vegetation of that place. The three elements of climate, temperature, rainfall and wind are connected at one place but one does not cause the other.

Natural and Human Phenomena

As already remarked in the section related to the development of this

concept serious attempts have been made to find the influence of natural conditions on human activities. Natural environment was considered as a geographic factor and human geography, according to environmentalist view-point, was the study of influence of this geographic factor on man. This makes causality one sided which in real practice is not completely so. A two way traffic is taking place. It is the nature influencing man and man influencing nature. (Refer concept No. VII. Interaction). Man today is changing relief and modifying climate. He has made drastic changes in soil and vegetation all over the world.

Human Phenomena

Causal relationships can readily be established between one phenomenon of the nature and the other. But it is comparatively difficult to find these between the human phenomena. Mostly there are connections. In this sphere land use is connected with the settlement but one does not cause the other. People living in an area must either produce food or buy food. In latter case they have to do some other work. In other examples like communication and settlements, minerals and manufacturing, Roger Minshull identifies connections but not causality.

Coincidence

Preston James, who studied man's activities objectively, has come to the conclusion that man does not behave reasonably in the geographic context and that he can be unreasonable at times. So while studying his activities we should not always try to present a reasonable explanation of the same. The two phenomena may be there because of coincidence. The occupation of eastern seaboard of North America facing Europe by early settlers is an example of coincidence. Many things that we find in a certain area are there by coincidence.

Let us conclude the discussion with the words of Hartshorne who remarks that the concept of geography as a study of relationships has failed to provide the subject with concrete phenomena to be studied, or with "a distinctive and sufficient method or discipline."

X

GEOGRAPHY IS THE SYNTHESISING SCIENCE AND AN INTEGRATING DISCIPLINE

If science is defined as knowledge arranged in an orderly manner,

geography is a science like botany, physics, economics and history. But considering the nature of geography it is a fact that geography is a science unlike botany, physics, economics and history. How are sciences classified? To which category does geography belong? How is geography related to other sciences or groups of sciences. These are some of the questions that must be answered in connection with the elaboration of the present concept.

Classification

Hettner's three pronged approach to the study of reality shall be the criterion for the classification of sciences. The first group is that of **systematic sciences**, which study relation of similar phenomena. They are characterised by the study of a single phenomenon in isolation. Botany, for example is concerned with the study of plants, physics with matter and energy and economics with production and consumption of goods. Systematic sciences are classified into natural (phenomena of nature) and social (human phenomena) sciences. Natural sciences are further divided into physical (non-living) and biological (living) sciences. Botany and Zoology are systematic biological sciences while the examples of systematic physical sciences are physics, chemistry, petology and geology. Economics, ethnology, sociology and political sciences are systematic social sciences. The method, generally, employed in these sciences is that of analysis. Geography is not a systematic science and it is now amply clear how it is different from botany, physics and economics.

The second group comprises **historical or chronological sciences**. Here we consider the sections of reality in terms of time. The phenomena are studied in view of their development in time. History and historical geology belong to this group. Here the general approach is synthesis and the unit of study is the period of time.

The third category includes the **spatial or the chorological sciences**. Here the sections of reality are considered in terms of space. Chorological sciences study the arrangement of phenomena in space. If the space selected is celestial it is astronomy and if it is earth space it is geography. The approach adopted for study is synthesis and the units of study are sections of earth space. Geography unlike history, is a spatial science where the arrangement and division of phenomena in space is studied. Here the unit of study is an area or a place. It studies all kinds of pheno-

DEDICATED TO MY MOTHER
INDRANI
(SHOBI)

DEDICATED TO
GANDHI

INDEX

- Absolute Location, 200, 218
- Academic discipline, 194
- Adjustment of Human activities to Natural Environment—G as a study of, 204
- Aegean 168
- Africa 5, 37
- Age of Discovery 171
- Agricultural Geography, 189
- Agronomist 179
- Aims of Education 126
- Aims of Teaching geography 1-19, 163
- ALCOTT, A.B. 29
- Alexandria 169, 194
- Al Beruni 171
- AL-Farghani 171
- Al Khwarizimi 171
- Anderson, G. Lester 23
- Anthropocentric, 197
- Anthropogeographie, 174, 206
- Anthropology 185
- Apian, Peter 172
- Applied Geography, 183
- Arabs, 171
- Arabia 169
- Area, 217
- Area as content, 218
- Area as organisation, 213
- Area as place, 218
- Areal Association, 216
- Areal Differentiation, 215, 220
- Areal Differentiation—G as a study of 215
- Aristotle 171
- Aryabhatta, 171
- Assyrians 168
- Astronomy 40, 185
- Atlantic Ocean 38
- Atmosphere, 196
- Atlas 82, 108
- Audio-Visual Aids 88, 90
- Audio-Visual equipment 82, 114
- Australia 4, 14, 37
- Austria 14
- Balchin, W.G.V. 88, 99, 177, 182
- Bar graph, 98
- Bauer, Ludwig 150, 151
- Belongingness 3, 127
- Berlin 172
- Bhaskara 171
- Biddle, D.S. 128
- Bining, A.C. 25, 141, 146,
- Biogeography 189
- Biology 40, 185
- Biological environment 179
- Biophysical environment, 180
- Birrel, W.K., 70
- Black board, 109
- Botany 165, 185
- Bowman, I., 208
- Brayan, P.W., 201
- Brazil 4
- Briault, E.W.H. 18, 29, 36 130, 132
- Broek, J.O.M. 107, 189, 191, 200, 204
- Brubacher, James S. 1, 21, 23, 89, 138 160
- Brunhes, Jean 175, 206, 208, 222
- Bulletin board 109
- Canada 4
- Cape of Good Hope 170
- Cartographer 176,
- Cartography 172, 191
- Causal connections 207, 217
- Causality 222

- Causal relationships 15, 207, 221
 Causal relationships—G as a study of, 221
 Celestial space 185
 Chalkboard 81, 109
 Charts 97
 Chemistry 40, 165, 185
 Child and methods of teaching 21
 China 4, 170
 Cholley 216
 Chronological sciences 185, 188
 Chorography 171, 215
 Christ 168
 Chronological sciences 185, 224
 Circle graph 99
 Citizenship 127, 128
 Climate 213
 Climatology 189
 Cluverius, 172
 Co-curricular activities 161
 Colby, Charles G. 185,
 Coleman, Alice 165
 Columbus, Christopher—170
 Comenius, J. Amos 21
 Comparative method 36
 Completion type tests 145
 Concepts and trends 194
 Connections and coincidences 207, 222
 Content of geography 176
 Contrived experiences 30
 Conventional signs 107
 Correlation 131, 137, 150
 Cosmos 173
 Courses of Study 161
 Cox, B 147
 Cultural environment 214
 Cultural geography 189, 191, 199
 Cultural landscape 203
 Curriculum 24, 160-167
 Current events 136
 Current events corner 136
 Cyprus 168

 Dale, Edgar 87, 94, 98
 Danube 14
 Dark Age 169
 Darwin, Charles 174
 Data processing 76
 Davis, William Morris 174, 185
 Debenham, Frank 64, 105, 176
 De Gama, Vasco 170
 De Geer, Sten 199
 De Kieffer, R.F. 109
 Demko, George, J 192
 Geography 185
 Description 195
 Description of the earth—G
 as a study
 Determinism 206
 Dewy, John 29, 48
 Diagrams 94
 Dickinson, Robert E. 198
 Dikshit, om 111
 Direct experiences 30
 Direct observations 120, 126
 Direction 106
 Discovery and explorations 123,
 Display boards 109
 Distributions—G as a study of 199
 Dualism 174, 175
 Dualism between physical and human
 geography 174, 175
 Dualism between systematic and
 regional geography 176
 Dunn, S.S. 138

 Earth 196
 Earth as the home of man
 —G as the study of the 197
 Earth surface 197
 Ecology 210
 Economics 179
 Economic geography 189, 199
 Economic interdependence 8
 Ecosystem 210
 Edwards, K.C. 53
 Egypt 14
 Egyptians—168
 Emile 20
 England 206
 Environmental determinism 206
 Epidiastope 113
 Equinoxes 33
 Eratosthenese 171
 ErdKunde—173
 Eskimos 90, 99
 Essay type questions 139—143
 Europe 170
 Evaluation 138—147, 153
 Excursions 34, 120, 166
 Experimentation in geography 41
 Explanatory description 195
 Exploration and discovery 168, 194
 Extra-curricular activities 161

 Fairgrieve, James 2, 4, 119, 128
 Farming 220
 Febvre, Lucien 208
 Field trips 3
 Field studies 120
 Field work 34, 35, 121, 183
 Films 113
 Film strips 82, 112
 Five Year Plans 8
 Flannel board 109
 Flow chart 24

- Forester, George 172
 Formal regions 54
 Fox, J.W. 54, 55
 France 194
 French Academy of Sciences—172
 French school of geography 215
 Froebel 21
 Functional regions 54
 Function of geography 119
 Ganga 62
 Garnet, Olive 105
 Ga Sur 99
 General geography 181
 Genuine local patriotism 2—10
 Geography 185
 Geographical determinism 206
 geographica 195
 geographie 195
 Geography lesson 150
 Geographical method 122
 Geographical view point 184
 Geography museum 83—86
 Geography of manufacturing 189
 Geography of resources 189
 Geography room 71—82
 Geology 185, 197
 Geological specimens 110
 Geological structure 213
 Geomorphology 189
 Geophysics 185 197
 German geographers 206
 Germany '4, 194
 Gill, John 119
 Globalism 3
 Globe 81, 110—111
 Goethe 173
 Gopsill, G. H. 89, 121, 123, 124, 162
 Graded Syllabus 163
 Graphic aids 96
 Graphicacy 182, 183
 Graphs 98
 Great Britain 169, 194
 Greece 168
 Greeks 131, 168, 169, 71, 176, 194
 Gulf stream 38
 Yaklyut 172
 Iardware 94
 Hartshorne, Richard 175, 185, 186, 188
 191, 202, 203, 204, 215, 216, 219, 223
 Harvard Report 2
 Hegel 173
 Heintzelman, O.H. 101, 105
 Hettner, Alfred 175, 176, 184, 215, 224
 Herbart, Johann Friedrich 21, 151
 Herbetson, A.J. 175
 Herodotus 131, 171
 Himalayas 7
 Hipparcus 171
 History 134, 164, 185
 Historical geography 192
 HMT 126
 Holland 14
 Holistic in approach 15
 Home geography 119, 130
 Home area 119—120
 Homeland 165
 Home region 3, 120, 122, 126
 Hubbard, Henry D. 98
 Human anatomy 52
 Human environment 177
 Human geography 174, 179-180, 189
 Humboldt Alexander Von 172, 174, 176
 181, 215
 Hungary 14
 Huntington, Ellsworth 175, 206, 207
 Hydrology 189
 Hydrosphere 196
 Ibn Batota 170
 Ibn Hakul 170
 Ibn Yusuf 171
 Imagine accurately 119
 India 4-6, 169
 Indian Ocean 212
 Indians 169
 Indirect sources 120
 Insolation 154-156
 Integrating discipline—Gas et al. 15, 223
 Interaction 121, 136, 209, 211
 Interaction between man and environment—Gas a study of 209
 Interrelationship 122, 125, 127, 136,
 Interdependence 13, 127
 International understanding 10-18, 127
 Iraq 168
 James P.E. 13, 177, 216, 223
 Japan 14, 126
 Jensen, J.G. 126
 Jones, Clarence F. 189
 Kant, Immanuel 134, 172, 113
 Kaul, A.K. 27, 61, 132
 Kilpatrick, Dr W.H. 48
 Kinder, James 100
 Kinds of maps 103
 Kiro Siwo Current 38
 Kothari Commission Report 16
 Kraft, Viktor 226
 Kuwait 12
 Laboratory method 40
 Lamarck 173

- Land and Sea breeze 45
Land forms 212
Landscape 120, 121, 201
Landscapes—G as a study of natural and cultural 201
Landschaft 201
Land use 192
Languages 133, 164
Laplace 173
Lawther, James 41
Learning 148, 160
Lesson Plan 151
Lester, Anderson G 23
Lesson Planning 148-159
Line graph 98
Literacy 182
Lithosphere 196
Local area 119-127
Local geography 120
Localism 3
Location 199, 212
Localisation 219
Locke, John 20
Long answer questions 141-142
Loves, W.H.C. 10
Lukermann, F. 177
Lussac, Gay 173
Mackinder, Halford J 209
Magellan, Fernando 170
Malte-Burn 195
Man-environment relationship 204, 209
Maps 80, 99-108
Map display 76
Map language 123
Map skills 105
Map work—165
Marthe, Friedrich 199
Matching type test 143-144
Mathematics 135, 164, 165
McKinney, W.M. 111
McKown, H.C. 89, 92, 99, 103
Medical geography 191
Mediterranean Sea 168, 169, 194
Meteorological apparatus 82
Meteorology 40
Methodology 122, 128
Methods of teaching 20-54
Methods of study of geography 180
Mikhaylov 104
Mill, H.R. 105
Minshull, Roger 168, 179, 180, 182, 183, 184, 198, 199, 209
Models 81, 110
Multiple choice tests 144-145
Munster, Sebastian 172
Narrative method 82
Native animal life 214
Nation 3
National 3
Nation of diversity 5-6
Natural environment 205
Natural landscape 126, 203
Natural sciences—185
Natural vegetation 214
Nature of geography 176
NCERT 10, 133, 147, 159
Nehru, J.L. 63
New Type Tests 140-141, 143-146
Nigeria 156-159
Non-Aligned Summit 5
North Atlantic Drift 222
Numeracy 182, 183
Objective type questions 139-141, 143-146
Objects and specimens 110
Observations 20
Observation method 23
Observation of the sun 32
Observation of the weather 33
Oceanography 189
Oil crisis 15
Ordnance Maps 104
Organisational activities 60-86
Origin of Species 174
Overhead projector 133
Pacific Ocean 38
Pacific ring of fire 200
Palaeontology 185
Patriotism 2-10
Pattison, W.D. 65
Pedagogical maxims 24
Pedology 174
Penck, Albert 174, 203
Peschel, Oscar 174, 206
Pestalozzi, J.H. 20
Philosophy of method 21
Philosophy of Place 177
Physical environment 127, 179
Physical geography 174, 178-179, 189
Physical landscape 203
Physical map 103
Physics 165, 185
Pictures 81

- Pictorial graph 99
 Pie graph 99
 Pir Pajal Range 222
 Place 177
 Planning 66
 Plato 171
 Political geography 191
 Political map 103
 Polo, Marco 170
 Population geography 191
 Position 200
 Possibilism 208
 Present N.C.E.R.T., Syllabus 166
 Principles underlying curriculum construction 162
 Projected aids 112
 Projections 106
 Projection equipment 83
 Project method 48
 Projector 82
 Projects 166
 Psychological basis 25, 29, 37, 47
 Ptolemy 171, 195
 Pythagoras 171

 Radio 144
 Raina, G.N. 150
 Raja Ganesam, D.—137
 Ratzel, Friedrich 174, 206
 Reality in geography 125
 Red Sea—169
 Relationships 203
 Relationship with other subjects 164
 Relative position 200
 Region-definition 53
 Region-kinds 53
 Regional geography 176, 180, 181, 191
 Regional interdependence 163
 Regional method 52-56
 Richthofen, Ferdinand von 174, 176, 215
 Ritter, Carl 172, 173, 174, 176, 181, 197, 215
 River Nile 126
 Roman 168
 Romania 14
 Romans 131, 169, 195
 Rome 168
 Rotation 44
 Rousseau, Jean Jacques 61
 Royal Society of London 172, 209
 Royeu, William Van 177
 Rural & Urban settlements 189

 Sand tray 78
 Sauer, Carl 201, 202, 208, 215
 Saylor, J. Galen 161
 Scale, 106

 School geography 2
 Schelling 173
 Schiller 173
 Schluter, Otto 201
 Sciences 135, 164
 Scope of geography 185
 Semple, Ellen C. 175, 206
 Sense of reality 125
 Sharma, R. P. 191
 Short answer questions 142—143
 Shrinking world 12
 Slides 112
 Social geography 189, 199
 Social sciences 15, 185
 Software 94

 Solar system 196
 Solstice 33
 South America 37
 Space 197
 Spatial study 15
 Spatial relationships 219
 Spatial relationships—
 G as a study of 219
 Special geography 176

 Specimens 110
 Statistical data 125, 173
 Stencils 76
 Stevenson, J.A. 49
 Story telling method 25, 28
 Strabo 171, 195
 Stream chart 97
 Structure 2, 3
 Study of the world 163
 Sub Fields of Geography 188
 Surface of the earth 197
 Surveying 105
 Surveying equipment 82
 Syllabus 161
 Symbolic experiences 88
 Sympathy 126, 127
 Synthetic study 15
 Synthesising science—
 G as a science of 223
 Systematic geography 176, 180, 181, 191
 Systematic sciences 185, 224
 Switzerland 39

 Tabular chart 94
 Taylor, Griffith 175, 206
 Teacher and methods of teaching 23
 Teaching aids 87-117
 Techniques of geography 187
 Teleological viewpoint 173, 197
 Television 115
 Temporal study 212
terra incognita 170
 Terrain 204

- Terrestrial space 185
 Textbook method 56-58
 Thales 171
 Thematic maps 103
 The Nation and the School 10
 Thralls, Zoe A. 121, 128, 136, 188
 Three approaches to the study of reality 184
 Topical geography 181
 Total environment 214
 Tracing table 78
 Transport geography 189
 Tree chart 94
 Trewartha, G.T. 191
 Tropical monsoon climate 5
 True and False Tyre Tests 145
 Twisted, A.D. 122
 Understanding 126, 128
 United Nations 10
 UNESCO 10, 14
 Unified field 164
 Unique creature 210
 Unique planet 196
 Universal brotherhood 15
 Universal declaration of Human Rights 10
 Universal geography 181
 Urals 173
 192
 194
 126, 214
 Vallaux 175, 206
 Varenius, Bernard 172, 176
 Vasudeva Kutambakam 14
 Verbalism 30
 Vidal de la Blache, Paul 175, 206, 207, 215
 Visualisation 90
 Visual-Spatial Method 183
 Vocabulary 123, 124
 Volcanoes 200
 Vrahmihra 171
 Waites, Bryan 104
 Water bodies 213
 Watson, George 114
 Weather and climate 213
 Weather observations 33
 Weather observation kit 82
 Welpton, W.P. 40
 West Germany 126
 Whittlesey, Dervent 222
 Wittich, W.R. & Schuler, C.F. 30
 Wooldridge, S.W. & East W.G. 100
 World 11, 15, 16, 119, 121, 123, 197
 World stage 119
 Yamuna 200
 Yugoslavia 14
 Zelinski 101

Gandhi Memorial College Of Education Bantalab Jammu

